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/strain="Romaine"
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                             1561 AAAGAAGAAGGAAATTCTGAATGAACTTCAAATGGAAGCGACTGAAGTTGAAAAAGCTT 1620
                                                                                                      1441
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                                                                                                                                                                                                                    1381 cttgagaaaacagcggaagagggcgagaagttgttgataaaagaagctgtagagatagaa 1440
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                                                                                                                                                                                                                                                                                                                                      1261 acactccccgaatcgatcatcccaaacctacaaaaagcagccaaatccgtgggtcgagac 1320
                                                                                                                                                                                                                                                                                                                    1261 ACACTCCCCGAATCGATCATCCCAAACCTACAAAAAGCAGCCAAATCCGTGGGTCGAGAC 1320
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Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
euphyllophytes; Spermatophyta; Magnollophyta; eudicotyledons; core
eudicots; Asteridae; euasterids I; Solanales; Solanaceae;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Submitted (25-AUG-1995) Robert C. Bugos, plant Molecular physiology, University of Hawaii, 3190 Maile Way, Honolulu, HI
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Bugos, R.C. and Yamamoto, H.Y.
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42. .1478
                                                                                                                                                                                                                                                                                                         /db_xref="GI:1463123"
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DVALMYWEKWGOFAKTALVAIFILSVASKADAVDALKTCTCLKECKLELAKCISNPA
DVALMYWEKWGOFAKTALVAIFILSVASKADAVDALKTCTCLKSCDVGLFPY
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CAANVACLOTCNNRPDETECQIKCGDLFENSVYDEFNSCAVEKKCVPRKSDVGLFPY
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/db_xref="taxon:4097"
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262 c 366 g 461 t
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                                                                                                                                                                                                                        EKKYEEGERTIIKEVEEIEEEVEKYRDKEVTLFSKLFEGFKELQRDEENFLRELSKEE
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NDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDFNTFIKTDNTCGPEPPLVERL
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/gene="TVDE1"
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                                                                                       1443 agaggttgaeanegaggtggagaaggttagagatactgagatgactttgtttcagaggtt 1502
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                                                        1277 AGAAGTA----
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                                                                                                                              GGAGAAGAAGTTGGAAGAAGGAAGGAAGGACGATCATAAAAAGAAGTTGAGGAGATAGAAGA 1276
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Submitted (02-JAN-1996) Robert C. Bugos, Plant Molecular Physiology, University of Hawaii, 3190 Maile Way, Honolulu, HI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      agaagagaaggaaattetgaatgaactteaaatggaagegactgaagttgaaaagetttt 1622
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Bugos,R.C. and Yamamoto,H.Y.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Bugos,R.C., Hieber,A.D. and Yamamoto,H.Y. Xanthophyll cycle enzymes are members of the lipocalin family, the first identified from plants
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PPIOSADLRTTGGRSSRPLSAFRSGFSKGIFDIVPLBSKNELKELTAPLLLKLVGVLA

CAPILIVBSADAVDALKTCACLLKOCRIELAKCIANPACAANNACLOICNNRPDETECO

IKCGDLFENSVVDEFNECAVSRKKCVPRKSDLGEFPAPDPSVLVQNENISDENGKWYI

TSCLNPTEDAFOCQLHEEHTEGDNKLVGNISWRIKTLDSGFFTRSAYQKFVODPNOFS

VLYNHDNEYLHYODDWYILSSKIENKPEDYIFVYFGRNDAWDGYGGAVVYTRSSVLP

NSIIPELEKAAKSIGROFSTFIRTDNTCGPBPALVERIEKTVEGERIIVKEVEEIEE
    /product="violaxanthin_de-epoxidase"
285 c 376 g 409 t
                                                                     /gene="AVDE1"
384. .1430
                                                                                                                          EVEKEVEKVGRTEMTLFQRLAEGFNELKQDEENFVRELSKEEMEFLDEIKMEASEVEK
                                            384. .1430
/gene="AVDE1"
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/protein_id="AAC50032.1"
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/db_xref="GI:1465735"
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/codon_start=1
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                     1224 GTAGAGAAGGAAGTGGAGAAGGTCGGTAGGACTGAGATGACCTTGTTCCAGAGATTGGCT 1283
                                                                                           1447 gttgaaaaagaggtggagaaggttagagatactgagatgactttgtttcagaggttgctt 1506
                                                                                                                                     1164 AAGACAGTGGAAGAAGGTGAAAGGATAATCGTAAAAGAGGTTGAAGAGATAGAAGAAGAG
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                                                                                                                                                                                                      1104 ACATTCATTAGAACGGATAACACATGTGGTCCTGAACCTGCGCTCGTGGAGAGAATTGAG 1163
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                             864 CAACCTGGTGTTCTCTACAATCATGACAACGAGTACCTTCACTATCAAGATGACTGGTAT
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               744 CATGAGTICCACACAGAAGGTGACAAGCTTGTTGGGAAACATCTCTTGGAGAATAAAG 803
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            submitted (08-JAN-1998) Arabidopsis thaliana Genome Center, Department of Biology, University of Pennsylvania, 38th Street and Hamilton Walk, Philadelphia, Pennsylvania 19104-6018, USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Genomic sequence for Arabidopsis thaliana BAC F22013
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Submitted (18-Apr-1998) Arabidopsis thaliana Genome Center, pepartment of Biology, University of Pennsylvania, 38th Street and Hamilton Walk, Philadelphia, Pennsylvania 19104-6018, USA On Apr 18, 1998 this sequence version replaced gi:2809231.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     submitted (26-JAN-1998) Arabidopsis thaliana Genome Center, Department of Biology, University of Pennsylvania, 38th Str Hamilton Walk, Philadelphia, Pennsylvania 19104-5018, USA
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Unpublished
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                F22013 has a deletion of a cytosine at position 7887 (codon start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ~VEKEVEKVGRTEMTLFQRLAEGFNELKQDEENFVRELSKEEMEFLDEIKMEASEVEK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /db_xref="GI:3063441"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         YDAAKBIEKSLLELHQVFLDMAVMYESQGEQNDEIEHHVINASHYVADGANELKTAKS HQRNSRKWMCIGIIVLLLIILIVVIPIITSFSSS" 1010 (10982 11218,11470 11646,11732 11896,11987 12235) nonce putative thioredoxii; similar to ESTs gb[T46281, note putative thioredoxii; similar to putative thioredoxii; similar to ESTs gb[T46281, note putative thioredoxii; similar to putative thioredoxii; similar to ESTs gb[T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LSSFLEEAEYVKAEMGLISETLARIEQYHEESKGVHKAESVKSLRNKISNEIVSGLRK
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /product="F22013
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CDS

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Matches 668;
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                                                                                                                                                                                                                                                     Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CDS
                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SKOMASVILASTEDONAMICE EFFORMET IF SIMPLYFITVUMLMMIGICHLITEVA
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RCCOUFF MCVTNETMINISTERMENIIOSISRVSGBCGTLAHTWGLGKTFQVIAFLYTAM
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/db_xref="GI:3063446"
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/product="F22013.8"
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FSGFLPEDLGNATTLEVLDFRGGYFEGSVPSSFKNLKNLKFLGLSGNNEGGKVPKVIG

FSGFLPEDLGNATTLEVLDFRGGYFEGSVPSSFKNLKNLKFLGLSGNNEGGKVPKVIG
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KGKKKKNOKASGEKSADCMLE"
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                                                                                                                                                                                                                     Score 406.4; DB 8 Pred. No. 1.1e-74;
                                                                                                                                                                                  Mismatches 246;
                                                                                                                                                                                                                                                                  DB 8;
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RESULT 5
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                                                                                                                                                                                                      1610 ttgaaaagctttttgggcgcgcgttaccgattaggaaacttagataaa 1657
                                                                                                                                                                                                                                                                                  7204 GAGAGTTAAGTAAAGAAGAGATGGAGTTTTTTGGATGAGATCAAAATGGAAGCAAGTGAGG 7263
                                                                                                                                                                                                                                                                                                                                           7144 TGTTCCAGAGATTGGCTGAAGGATTTAATGAACTGAAGCAAGACGAGGAGTTTTCGTGA 7203
                                                                                                                                                                                                                                                                                                                                                                               1490 tgtttcagaggttgcttgaagggtttaaggagttgcaacaagatgaagagaattttgtga 1549
                                                                                                                                                                                                                                                                                                                                                                                                                               7084 AAGAGATAGAAGAAGAGGTAGAAGGAAGGTGGAAAGGTCGGTAGGACTGAGATGACCT
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               7024 TCGTGGAGAGAATTGAGAAGACAGTGGAAGAAGGTGAAAGGATAATCGTAAAAGAGGTTG 7083
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           6964 TAGGCAGAGACTTCÁGCACATTCÁTTAGAACGGÁTAACACATGTGGTCCTGAACCTGCGC 7023
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ATU39452 2884 bp DNA PLN 10-FEB-1996
Arabidopsis thaliana syntaxin-related knolle mRNA, complete cds.
91184166
U39452.1 GI:1184166
                                                                                      ATU39452
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SOURCE KEYWORDS

ORGANISM

Arabidopsis thaliana thale cress

Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; euphyllophytes; Spermatophyta; Magnoliophyta; eudicotyledons; core

Rosidae; eurosids II; Brassicales; Brassicaceae;

Lukowitz,W., Mayer,Ü. and Jurgens,G. Cytokinesis in the Arabidopsis embryo involves the syntaxin-related KNOLLE gene product

REFERENCE

AUTHORS TITLE

JOURNAL

Entwicklungsgenetik, Unive D-72076 Tuebingen, Germany

Direct Submission (26-OCT-1995) Wolfgang Lukowitz, Lehrstuhl fuer

Universitaet Tuebingen, Spemannstrasse 37-39,

REFERENCE

Arabidopsis.

TITLE

JOURNAL

96140640

Lukowitz,W.

(bases 1 to 2884)

(1), 61-71 (1996)

FEATURES

CDS

/gene="knolle" 520. .1452

/gene="knolle"

/note="syntaxin-related"

/strain="Columbia"

/db_xref="taxon:3702"

/organism="Arabidopsis thaliana"

. 2884

on/Qualifiers

BASE COUNT ORIGIN

582 g

900 t

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/db_xref="g1:1184167"

/db_xref="g1:1181168"

/db_xref="g1:118168"

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DEFINITION GEACCESSION ACCESSION ACCESSION ACCESSION ACCESSION ACCURATE ACC		Db 1889 TTGA	Qy 1610 ttga	Db 1949 GAGA	Qy 1550 ggga	Db 2009 TGTTC	Qy 1490 tgttt	Db 2069 AAGAG	Qy 1430 tagag	Db 2129 TCGTG	Oy 1370 tggtg	Db 2189 TAGGC	Qy 1310 tgggt	Db 2249 CGAGA	Qy 1250 cccga	Db 2309 TTGTA	Qy 1190 tcgtat	Db 2369 ATGATT	Qy 1142	Db 2429 CACCCA	Qy 1142	Db 2489 CTACAA
sequence for Arabidopsis thaliana BAC 12/6/ FFOM CHAPTER Sequence. 2	PLN 20-MAY-	AAAAATTGTTTGGGAAAGCTTTGCCAATCAGGAAGGTCAGGTAGA 1842	0 0		gggagttgagtaaagaagagaaaggaaattctgaatgaacttcaaatggaagcgactgaag 1609		tgtttcagaggttgcttgaagggfttaaggagttgcaacaagatgaagagaattttgfga 1549		tagagatagaagaagaggttgaaaaagaggttggagaaggttagagatactgagatgactt 1489		tggtggaaaggcttgagaaaacagcggaagagggggagaagttgttgataaaagaagctg 1429		tgggtcgagactttaacaatttcataacaaccgacaatagttgtgggcctgagcctccat 1369		cccgaagcccgacactccccgaatcgatcatcccaaaacctacaaaaagcagccaaatccg 1309		togtatactaccgaggtogaaacgacgcatgggatggatacggtgggtccgtgatctaca 1249					GACTG

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                                                                                                                                                                                                                                                                                                                         2789 TGCTGTGTCGAGCAAAAAGTGTGTTCCTAGAAAATCTGATCTCGGAGAATTTCCTGCCCC 2730
                                                                                                                                                                                     2669 TACAAGTGGCTTGAATCCAACCTTTGATGCCTTCGACTGCCAGCTGCATGAGTTCCACAC 2610
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                                                                                                                                                                                                                                                                                                                                                                                                              744 atgtcagataaaatgtggtgacttgttcgaaaacagtgtggtggaccaattcaacgagtg 803
1101 ttataatcatgacaatgagtttcttcactaccaagatgact---
                                                  1041 tttctttactcgatctgctgtgcaaacatttgttcaagatccagatcttcctggagcact 1100
                                                                                                                     2609 AGAAGGTGACAACAAGCTTGTTGGAAACATCTCTTGGAGAATAAAGACCCTAGACAGTGG 2550
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0; Mismatches 247;
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SOURCE
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                                                                 AUTHORS
TITLE
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                                                                                                                                                                                                                                                                      Walker,M., Shinn,P., Brooks,S., Buehler,E., Chao,Q., Dunn,P., Khan,S., Kim,C., Altafi,H., Araujo,R., Conn,L., Conway,A.B., Gonzalez,f., Hansen,N.F., Huizar,L., Kremenetskaia,I., Lenz,C., Li,J., Liu,S., Luros,S., Rowley,D., Schwartz,J., Toriumi,M., Liy,J., Liu,S., Luros,S., Rowley,D., Schwartz,J., Theologis,A. and Pysotskaia,V., Yu,G., Davis,R.W., Federspiel,N.A., Theologis,A. and
Direct Sunnission
Submitted (02-MAR-1999) Arabidopsis thaliana Genome Center,
Department of Biology, University of Pennsylvania, 38th Street and
                                                                                                                                                   Unpublished (1999)
                                                                                                                                                                                                                  Genomic sequence for Arabidopsis thaliana BAC T27G7 from chromosome
                                                                                               Ecker, J.R.
                                                                                                                         (bases 1 to 89493)
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1345 aatagttgtgggcctgagcctccattggtggaaaggcttgagaaaacagcggaagagggc 1404
                             1285 aacctacaaaaagcagccaaatccgtgggtcgagactttaacaatttcataacaaccgac 1344
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                                                                                                                     Loca1
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                                                                                           h
3.9%; Score 78; DB 5
Similarity 7.5%; Pred. No. 7e-07;
33; Conservative 242; Mismatches
                                                                                                                                                                                                                                          Recombinant fowlpox virus Patent: US 5670367-A 14 23-SEP-1997;
                                                                                                                                                                                                                                                              Dorner, F., Scheiflinger, F. and Falkner, F. Gunter.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               184;
                                                                                                                                                                                                                                                                                                                        Unknown
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                                                                                                                                                                                                                                                                                                                                                                 92724471
I66494.1 GI:2724471
                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 14 from patent US 5670367.
                                                                                                                                                                                                                                                                                                          Unclassified.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Hamiiton Walk, Philadelphia, Pennsylvania 19104-6018, USA 3 (bases 1 to 89493)
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1. .7218
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/db_xref="taxon:3702"
/chromosome="1"
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                                                                                                                    DB_5; Length 7218;
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                                                                                                                                                                                                                                                                                                                                              Submitted (11-AUG-1998) Institut fuer klinische und molekulare
Virologie, Universitaet Erlangen-Nuernberg, Schlossgarten 4,
Erlangen, Bayern 91054, Germany
                                                                                                                                                                                                                                                                                                                                                                                                            Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                            2 (bases 1 to 108409)
Albrecht, J.-C. and Fle
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                                                                                                                                                                                                                                                                                                                                                                                                                                                            Unpublished
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Primary Structure of the Herpesvirus
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Albrecht, J.-C. and Fleckenstein, B.
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Gammaherpesvirinae; Rhadinovirus
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                       EVESQOATDGOLNHRVEKVEKKLTCVICLLIGILVLLILLFMLGFLFLLMK"
COMplement(2144. .2264)
/product="HAUR 1"
complement(2752. .2865)
/product="HAUR 2"
                                                                RSPFNKYPKNYKKLRVDMGENWPPGIPPPQLPPRPANLGQKQSATSKNGPQIILREAT
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VESKHTSSSSSAGNGNETKCPDEONTQECITTIYIPWEDAKPKLMGLVKLDSSDSEEE
                                                                                                                                       /protein_id="AAC95538.1"
/db_xref="PID:g4019240"
/db_xref="GI:4019240"
                                                                                                                                                                                                                                         complement(join(90. .730,1339. .1507))
/note="TIO; similar to TIP and STP-C of herpesvirus
                                                                                                                                                                                        /evidence=experimental
                                                                                                                                                                                                                                     saimiri C-488"
                                                                                                             /translation="MANEPQEHEEGKPFFPPLGDSGEEGPPNIPQDPTPGTPPGPINS
                                                                                                                                                                                                                                                                               /db_xref="taxon:85618"
                                                                                                                                                                                                                                                                                                     /organism="Ateline herpesvirus 3"
/strain="73"
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EKKIGWLVHRKGTTVVDDRGDKPYPKLQEDREKPKFFLLKSPINITLQGGNINWSELD
LRDTIFKILEHPSVGCKEFIVSHIDKLVSGRVARTAIVOFWQLPVSDYSIIVPVLQGN
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KNSRLGIVLDIDYWTPWSSTNILYEGLYNVEKGVVYTFGGFTQTPNLMGVLNMALHWR
APLFFACQTGHITSLAQMSDMPVTQAPOMKMLHAHLNLLKCSSMPTIQGFFRQVPSDL
ATILPQTKIYNGFVSTALRTPTVCAATEASLREKTYLFQLGNFYTYNRHYLTWODSGK
BIGSILLALSFFMDCVKTESGIIVGMSTSLPIESMKAKLAAVCQHVSGARLLLSALPM
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VYVKPHNASFLEPVLGKFFRSVSPKTPFTSPAEQTLSTSYGPGPUCKIOUTTSRELVDI
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DTLQFLSSETPGIVIEVPSTKLYYVQGVLNLRNVDFQLVGKCISEPLFAVSQNSIDIM
SEPLDSLRQIWRKFSDACEADQVHPQPVEMHITTIPKFCPAGVCRFHSVYVYLLPHNS
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LAMASWNNIGSIIIQVAITLPYTAQAATSLQVVMDTAKTFCEALSVSCTFTASAIDGG
ASIVASAIVNTENVAKOMTPNLKHNDSFLLLLFTEKRYNHFGSVVQQICGKTFIGDLP
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MFYGHNLASGPAOHYPLTPNGSNATAGICSADGRHLALLHDPSLCNNICQWPYVPPTD
PPLKVSPWKTWFLDLHKWGITVQGASPPPSRTDDPLRSLVF"
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/note="orf03; similar to FGARATS"
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/protein_id="AAC95530.1"
/db_xref="PID:g4019232"
/db_xref="GI:4019232"
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AQLKSHVALQRDFRIMLAKPEVFCVAIGAMACELLFYHKTIGYNKBSDTYNTCVKNNS
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/protein_id="AAC95531.1"
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YGSVITYICNTGYOLLGSPTSSCLLGPDGRVNWTPRPPICEITKCKPPPTIANGTHIN
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note="orf 06"
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CDS

CDS

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EYSCLMSDINGTITURE GRVENTHVENGTACTEKTEGGMILVWQPLTA IELEEAMIEA
EYSCLMSDINGTITURE GRVENTHVENGTACTEKTEGGMILVWQPLTA IELEEAMIEA
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    product="DNA polymerase"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KSRSSVTPTEPEVIKQILLGMHNMQQEEYKKREEHKASQPSFLKRATDAFLRKRAGYK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     'codon_start='
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  KQALNEKLGPRCSYQTELVKKKILSRYDPDEHEVFKVTISSSHSVYKVSDYLVANGCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DISTEDEMI.
                                                                                                                                                                                                                                                                                                GLPDGFLKVIDILNESYENLRTGKVSMDDLTFSTELSRPISSYKTENLPHLTVYKKII
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /codon_start=1
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/note="orf 10; similar to Raji LF1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  .20152
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FEATURES
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ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches 121;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             62942 GGAGGAAGAGGAGGATGAGGAGGAAGAAGGAGGATGAGGATGAGGAAGGAAGAG 62888
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      63062 AGAGGAGGAAGAGGAGGATGAGGAGGATGAGGAGGAAGAGGATGAGGATGAGGA 63003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1563 agaagagaaggaaattotgaatgaacttoaaatggaagogaotgaagttgaaaag 1617
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1503 gcttgaagggtttaaggagttgcaacaagatgaagagaattttgtgagggagttqagtaa 1562
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1443 agaggttgaaaaagaggtggagaaggttagagatactgagatgactttgtttcagaggtt 1502
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1383 tgagaaaacagcggaagaggcgagaagttgttgataaaagaagctgtagagatagaaga 1442
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                                                                                                                                                                                                                                                                                                           Submitted (19-MAR-1997) Sanger Centre, Hinxton, Cambridgeshire, CB10 1RQ, UK. E-mail enquires: humquery@sanger.ac.uk Clone requests: clonerequest@sanger.ac.uk

On Mar 21, 1997 this sequence version replaced gi:1772946.

de Jong P.J.; enquires: http://bacpac.med.buffalo.edu/ IMPORTANT:
This sequence is the entire insert of clone 288L1. This sequence
has been finished according to sequence map criteria as follows.

An attempt is made to resolve all sequencing problems, such as
annotated human repeat sequence elements (e.g., Alu). Where the
                                                                                                                                                                               true right end of clone 288L1 is at 118595.

288L1 is from the human PAC library described in Toannou A.P. et
Nature Genet 6, 84-89.
                                                                                                                                                                                                                                            The true left end of clone 288L1 is at 1 in this sequence. The
                                                                                                                                                                                                                                                                                            sequence is ambiguous, there is an annotation using the 'unsure
                                                                                                                                                                                                                                                                                         feature key
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Burton Davies,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Eukaryota; Metazoa; Chordata; Vertebrata; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  22q12-qter; repeat polymorphism
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Z82196.1 GI:1903194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Human DNA sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (bases 1 to 118595)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8L1 118595 bp DNA PRI 18-APR-1997 n DNA sequence from PAC 288L1 on chromosome 22q12-qter contains and polymorphic CA repeat (D22S1152).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
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EIQILPDDVLLARCPSIREIVGKQLPNFKFSGSRYGPPGTITSFYVYGHCENVIKIKP
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/db_xref="PID:g4019237"
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IKRGFCVAYAVPCEFYLKAPGQDCEDKVTLDSQTSSIHWSDVLIKPGEGGPIVHAHHL
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/note="MIR repeat: matches 90. .231 of consensus" 31217. .31587
                                         28835
                                                                                                                                                                                     /note="MIR repeat: matches 147. .88 of consensus" 26804. .27048
                                                                                   /note="AluSq repeat: matches 264. .1 of consensus;
incomplete repeat"
                                                                                                                                                  /note="MIR repeat: matches 262. .13 of consensus"
                                                                                                                                                                                                                                                                                                                 /note="LIMC2 repeat: matches 786. .1075 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                  21849. .22532
/note="L1 repeat: matches 4686. .5390 of consensus"
                                                                                                                                                                                                                                 'note="MIR_repeat: matches 247. .8 of consensus"
                                                                                                                                                                                                                                                                        note="L1MA9 repeat: matches 1017. .91 of consensus"
                                                                                                                                                                                                                                                                                                                                          /note="AluSq repeat: matches 302. .1 of consensus"
23465. .23735
                                                                                                                                                                                                                                                                                                                                                                                                  /note="LIMC2 repeat: matches 1. .792 of consensus"
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21849. .22532
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19163. .19462
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                'note="SVA repeat: matches 1. .941 of consensus"
18158. .18396
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/note="MLT2_internal repeat: matches 4100. .4576 of
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                                                repeat: matches 89. .261 of consensus"
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                                                                                                                                                                                                                                             /note="Alusx repeat: matches 162..302 of consensus; incomplete repeat" 60777..61299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /note="MIR2 repeat: matches 49487. .49948
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /note="MIR repeat: matches 87. .243 of consensus" 47054. .47491
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /note="AluSq repeat: matches 1 . .303 of consensus
35067 . .35231
/note="MIR repeat: matches 67 . .240 of consensus"
35248 . .35292
37683 . .37968
                                  /note="MLTIF repeat: matches 13. 66729. .66916
                                                                     64600. .64897
/note="AluSx repeat: matches 1.
66470. .66630
                                                                                                                                          61887
                                                                                                                                                                             61604
                                                                                                                                                                                                              /note="L1 repeat: matches 4859...5390 of consensus" 61163...61610
                                                                                                                                                                                                                                                                                                                                    /note="L1 repeat: matches 2518. 60213. .60560
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48186 ..48506
/note="107 copies of 3 mer 87 % conserved"
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31711. .31850
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33957. .34137
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32234. .32433
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54222. .54345
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12922. .43423
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32499. .32734
                                                                                                                      /note="L1MA10 repeat: matches 368. .1034 of consensus"
                                                                                                                                                                               /note="LIMA5A repeat: matches 2.
51604. .61943
                                                                                                                                                                                                                                                                                                                                                                                                                      note="L1PA7 repeat: matches 634. .880 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                            note="AluSc repeat: matches 7. 57922. .58161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            incomplete repeat"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                'note="AluJb repeat: matches 2.
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MLTIF repeat: matches 241.
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                                                                                                                                                         repeat: matches 572. .910 of
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match 2.6%;
Best Local Similarity 50.6%;
Matches 125; Conservative
                                                                                                                                                                                                                                                                                                                                           ORGANISM
                                                                                                                                                                                                                                        TITLE
                                                                                                                                                                                                                                                                        AUTHORS
                                                                                                                                                                                                                      JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       48228 GGAGGAG 48222
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1371 ggtggaaaggcttgagaaaacagcggaagaggggggagaagttgttgataaaagaagctgt 1430
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1611 tgaaaag 1617
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         gtttcagaggttgcttgaagggtttaaggagttgcaacaagatgaagagaattttgtgag 1550
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             HSAJ9612 153053 bp DNA
Homo sapiens chromosome 17 clone
SEQUENCE, in unordered pieces.
                                                                                                                HTGS_phasel: Unordered fragments separated by 800 N nucleotides.
* NOTE: Tris is a "working draft' sequence.
* This record will be updated with the finished sequence
* as soon as it is available and the accession number will
                                                                                                                                                                                                    Submitted (17-JUL-1998) Steffen Hennig, MPIMG, Abt. I Planck Institut fuer Molekulare Genetik, Ihnestrasse
                                                                                                                                                                                                                                                     Radelof, U., Hennig, S., Ramser, J., Francis, F., Steffens, C. Klein, M., Seranski, P., Poustka, A., Reinhard, R. and Lehrac
                                                                                                                                                                                                                                                                                                                                           Homo sapiens
                                                                                                                                                                                    14195, Germany
                                                                                                                                                                                                                                        Direct Submission
                                                                                                                                                                                                                                                                                        Primates; Catarrhini; Hominidae;
1 (bases 1 to 153053)
                                                                                                                                                                                                                                                                                                                          Eukaryota; Metazoa; Chordata; Vertebrata; Mammalia;
                                                                                                                                                                                                                                                                                                                                                                             AJ009612.1 GI:3581972
HTG; HTGS_PHASE1.
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                                                                                                  be preserved.
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/note="MLT2_internal repeat: matches
consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /Tote="MLTIE repeat: matches 564. .307 of consensus" 68984. .69160 /note="MLTID repeat: matches 311. .140 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /note="MLTID repeat: matches 327. .502 of 57084. .67479
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /note="MLT1E repeat: matches 308. 65836. .67002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          €8694.
            /db_xref="taxon:9606"
/chromosome="17"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /note-"MIT2_internal repeat: matches 2856.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /note="MLT2_internal repeat: matches 4965.
                                                /organism≈"Homo sapiens"
/clone="PAC 1577"
                                                                                  Socation/Qualifiers
                                                                    .153053
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Pred. No. 0.14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                           HTG
PAC 1577 ma
                                                                                                                                                                                                                                                                                                            Homo
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                 map p11, WORKING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 118595;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
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                                                                                                                                                                                                                                                      and Lehrach, H.
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                                                                                                                                                                                                      Lehrach, Max
e 73, Berlin,
                                                                                                                                                                                                                                                                                                                          Eutheria;
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ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 REFERENCE
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JOURNAL
                                                                                                                                                                                                                                                                                AUTHORS
                                                                                                                                                                                                                                                                                                                                                                  JOURNAL
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches
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Best Local
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1540 aattttytgagggagttgagtaaagaagaagga 1574
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Baker, J., Baldwin, J., Barna, N., Beckerly, R., Benn, J., Boutwell, C.,
Brown, A., Castle, A., Cerny, J., Colangelo, M., Collins, S.,
Collymore, A., Cooke, P., Corliss, D., Depayre, E., Devon, K., Dewar, K.,
Donelan, L., Ferretra, P., FitzHugh, W., Forrest, C., Funke, R.,
Gage, D., Gardyna, S., Geralgery, K., Grant, G., Hagos, B., Heaford, A.,
Herena, L., Horton, L., Howland, J. C., Jacotot, L., Jones, C., Kann, L.,
Karatas, A., Lehoczky, J., Macdonald, P., Marquis, N., McEwan, P.,
McGurk, A., McKernan, K., Meldrim, J., Molla, M., Morris, W., Morrow, J.,
Mychaleckyj, J., Nahf, R., Naylor, J., Niloff, M., O'Connor, T.,
O'Donnell, P., Pavlin, B., Peterson, K., Riley, R., Roberts, D., Roy, A.,
Severy, P., Stange-Thomann, N., Stilwell, J., Stojanovic, N., Stone, C.,
Subramanian, A., Tesfaye, S., Tichovolsky, N., Torruella-Miller, I.,
Ve, W. T., Pand, Yody, M., Wheeler, J., Wu, Y., Wyman, D.,
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113; Conserv
                                                                                                                                         3 (bases 1 to 169931)
Birren,B., Linton,L., Nusbaum,C., Lander,E., Allen,N., Anderson,M.,
Baker,J., Baldwin,J., Barna,N., Beckerly,R., Benn,J., Boutwell,C.,
Brown,A., Castle,A., Cerny,J., Colangelo,M., Collins,S.,
Collymore,A., Cooke,P., Corliss,D., Depayre,E., Devon,K., Dewar,K.,
Donelan,L., Ferreira,P., FitzHugh,W., Forrest,C., Finke,R.,
Gage,D., Gardyna,S., Geraigery,K., Grant,G., Hagos,B., Heaford,A., Herena,L., Horton,L., Howland,J.C., Jacotot,L., Jones,C., Kann,L., Karatas,A., Lehoczky,J., Macdonald,P., Marquis,N., McEwan,P., McGurk,A., McKernan,K., Meldrim,J., Molla,M., Morris,W., Morrow,J., Mychaleckyj,J., Nahf,R., Naylor,J., Niloff,M., O'Connor,T.,
                                                                                                                                                                                                                                                                                                                                                                                                                   Vassiliev,H., Vo,A., Wagner,
Ye,W.J., Zhao,J. and Zody,M.
                                                                                                                                                                                                                                                                                                                              Submitted (15-OCT-1998) Whitehead Institute/MIT Center for Genome Research, 320 Charles Street, Cambridge, MA 02141, USA
                                                                                                                                                                                                                                                                                                                                                                                        Ye, W.J., Zhao, J. a
Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Unpublished
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Birren, B., Linton, L., Nusbaum, C. and Lander, E. Homo sapiens chromosome 17, clone hRPK. 209_J_20
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1 (bases 1 to 169931)
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/note="region between markers D17S71-D17S58"
, 34160 c 33964 g 39097 t 7007 others
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52.6%;
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                                                                                                                                                                                                                                                                   Anderson, M.,
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COMMENT
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                                    repeat_region
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Direct Submission
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   http://ftp.genome.washington.edu/RM/RepeatMasker.html
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Research, 320 Charles Street, Cambridge, MA 02141, USA On Oct 31, 1998 this sequence version replaced gi:3810569
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/rpt_family="MER91A"
10547. .10709
                                  complement(7895.
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/rpt_family="L2"
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complement(4654...4
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4208. .4519
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3701. .3881
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574. .871
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273. .571
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/clone="hRPK.209_J_20"
/clone_lb="RPCI-11 human BAC library"
/map="17"
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                                                                         /rpt_family="MLT1A1"
7114. .7469
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complement/1001
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complement/1=F?
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/rpt_family="MLT2FB"
complement(24361..24670)
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complement(19315. .19336)
/rpt_family="(CA)n"
20388. .20447
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complement(22754..22917)
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complement(16993.
/rpt_family="MLT1A1"
complement(31817. .31885)
/rpt_family="(CA)n"
                                     /rpt_family="AT_rich" 31421. 31780
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/rpt_family="L1M3e"
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complement(22564.
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22405
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/rpt_family="MLT2FB"
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/rpt_family="AluJo/FRAM"
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13037. .13106
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lement/2222
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lement/23377
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                                                                                                                                                                            Submitted (03-JUN-1996) Cell and Molecular Biology, University Technology, Sydney, Westbourne, Sydney, NSW 2065, Australia [Ocation/Qualifiers
                                                                                                                                                                                                                                                                                          Methylation sensitive protein binding to an intragenic active x-specific methylated region in the M. robustus Hprt gene Somat. Cell Mol. Genet. 22 (6), 461-476 (1996)
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1 (base: 1 to 1228)
Chong, S. and Piper, A.A.
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                                                                                                                                                                                                                              Chong, S. and Piper, A.A. Direct Submission
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Eukaryota: Metazoa; Chordata; Craniata; Vertebrata; Mammalia;
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/rpt_family="AluSx"
37861...37925
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58296. .38331
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/chromosome="X"
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Query Match 2.5%; Best Local Similarity 48.0%; Matches 144; Conservative

Score 50.4; DB 3; Pred. No. 0.4; 0; Mismatches 156;

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g2832349
x13901.1 GI:
FGFR-4 gene;
                                                                                                                                                                                                                                                                                                                                                                                         Submitted (17-JUN-1997) M. Kostrzewa, Inst. fuer Humangenetik, Justus-Liebig-Universitaet, Schlangenzahl 14, 35292 Giessen, FRG Related seguence: X57205.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                 Direct
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Eukaryota; Metazoa; Chordata; Vertebrata; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.

1 (bases 1 to 13095)

1 (bases, M. and Mueller, U.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Homo sapiens FGFR-4 gene.
Y13901
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Unpublished
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1152.e1=477
1152.e1=477
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7635
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ORIGIN
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                              1491 gtttcagaggttgcttgaagggtttaaggagttgcaacaagatgaagagaattttgtgag 1550
                                                                                                                             1431 agagatagaagaggttgaaaaagaggtggagaaggttagagatactgagatgacttt 1490
                    1611 tga 1613
                                                 1551 ggagttgagtaaagaagaaggaaattctgaatgaacttcaaatggaagcgactgaagt 1610
                                                                                                                                                                        1371 ggtggaaaggcttgagaaaacagcggaagagggcgagaagttgttgataaaagaagctgt 1430
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                                                                                                                                                                                                  Score 49.4; DB 10; Length 13095; Pred. No. 0.52; 0; Mismatches 121; Indels 0;
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AUTHORS
                                                                     Matches 108;
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                                                                                                           Query Match
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KEYWORDS
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JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORGANISM
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                                                      Local Similarity 52.4%; Pred. No. 0.46; hes 108; Conservative 0; Micmat-1
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* NOTE: This is a 'working draft' sequence. It currently
* consists of 14 contigs. The true order of the pieces
* is not known and their order in this sequence record is
* arbitrary. Gaps between the contigs are represented as
* runs of N, but the exact sizes of the gaps are unknown.
* This record will be updated with the finished sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2 (bases 1 to 194410)
Hyman,R.W., Qin,F., Fung,E.L., Conway,A.B. and Davis,R.W.
Direct Submission
Submitted (18-JUN-1998) Stanford DNA Sequencing and Technology
Center, Stanford University, 855 California Avenue, Palo Alto,
                                                                                                                                                                         77243 a 19864 c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    * as soon as it is available and the accession number will
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   HTG: HTGS_PHASE1 ... malaria parasite P. falciparum ... Plasmodium falciparum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Plasmodium falciparum chromosome 12, WORKING DRAFT SEQUENCE, 14
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                                                                                                                                                                                                                                                                172255 gap of unknown length
173886 contig of 1631 bp in length
174086 gap of unknown length
179217: contig of 5131 bp in length
179417: gap of unknown length
186342: contig of 6925 bp in length
186542: gap of unknown length
186542: gap of unknown length
194410: contig of 7868 bp in length
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165594: contig of 30005 bp in length
165794: gap of unknown length
169039: contig of 3245 bp in length
169239: gap of unknown length
169239: gap of unknown length
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       gap of unknown length contig of 2565 bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             contig of 72447 bp in length
gap of unknown length
contig of 12297 bp in length
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contig of 18277 bp in length
gap of unknown length
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                                                                                              DB 35;
                                                          98; Indels
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RESULT 15
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ORIGIN
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TITLE
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   66171 ATAAGGGTTATAATAAAAGAAAGAAA 66146
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                                                                                                                                                      Query Match 2.5%; Score 49.2; DB 35; Length 219200; Best Local Similarity 52.4%; Pred. No. 0.45;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1711 agagaaaaccccaaaaaaacttttgtatacgtgataaacgtgtttgtgatttgtttattgg 1770
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                                                           1651 agataaatttcgatgattgattcagacaatatatatagtcatatggattatgtagatact 1710
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   source
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Hyman.R.W., Fung.E.L., Qin.F., Tamaki.T., Kurdi.O.B. and Davis.R.W.
Plasmodium falciparum 3D7 chromosome 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           unordered pieces.
AC006279
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     on Apr 2, 1999 this sequence version replaced gi:4337165.

NOTE: This is a 'working draft' sequence. It currently

* NOTE: This is a 'working draft' sequence. It currently

* consists of 6 contigs. The true order of the pieces

* is not known and their order in this sequence record is

* is not known and their order in this sequence record is

* runs of N, but the exact sizes of the gaps are unknown.

* This record will be updated with the finished sequence

* as soon as it is available and the accession number will

* becoming the control of the control 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                HTG; HTGS_PHASE1.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Unpublished
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               94304, USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Submitted (05-JAN-1999) Stanford DNA Sequencing and Technology Center, Stanford University, 855 California Avenue, Paio Alto,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Hyman, R.W., Fung, E.L., Qin, F., Tamaki, T., Kurdi, O.B. and Davis, R.W.
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140332
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77727
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                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                 /organism="plasmodium falciparum"
/db_xref="taxon:5833"
/chromosome="12"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                            22418 c 19532 g 88036 t
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140131: contig of 62405 bp in length
140331: gap of unknown length
173508: contig of 33177 bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      212997: gap of unknown length
214904: contig of 1907 bp in length
215104: gap of unknown length
219200: contig of 4096 bp in length.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       173708: gap of unknown length 212797: contig of 39089 bp in length
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 Mismatches

                                                                                                                                                   98;
                                                                                                                                                                                                                                                                                                                                                       1004 others
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                                                                                                                                                             0; Gaps
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Search completed: October 14, 1999, 04:01:21 Job time: 4379 sec

ALIGNMENTS

P. falciparum live

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GenCore version 4.5
Copyright (c) 1993 - 1998 Comp
           Compugen Ltd.
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OM nucleic - nucleic search, using sw model

October 14, 1999, 00:56:50; Search time 183.21 Seconds (without alignments) 2705.259 Million cell updates/sec

Perfect score: US-09-075-375-1 1981 1 tgtgggttcgaattttaccc.....aatttttggctaaaaaaaa 1981

Scoring table: IDENTITY_NUC

Sequence:

Searched: 311585 seqs, 125096042 residues

Database : N_Geneseq_36:*

pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

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Query Match Best Local Similarity

95.6%;

Score 1894.6; Pred. No. 0;

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Length 1981;

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/*tag= a .note= "bases 26-29 are illegible in Fig misc_difference 66 \cdot .72
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Violaxanthin de-epoxidase; VDE; light; photosensitivity;
photogrotection; transgenic plant; zeaxanthin; antheraxanthin;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         28-JUL-1997 (first entry)
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/note= "bases 186-189 are illegible in Fig 1"
misc_difference 226. .227
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/note= "bases 147-149 are illegible in Fig 1"
misc_difference 186. .189
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                                                                                            Schaim 3; Fig 1; "Lipp; English.

Claim 3; Fig 1; "Lipp; English.

A CDNA clone (T66241) codes for the 55 kDa violaxanthin de-epoxidase A CDNA clone (T66241) codes for the Sex purified from romaine (VDE) (W09874) or romaine lettuce. VDE was purified from romaine lettuce chioroplasts and 2 tryptic peptides were used to develop primers (see also T66244-45), which amplified a partial VDE primers (see also T66244-45), which amplified a partial VDE cDNA library, and the 1981 bp DNA sequence was identified. VDE cDNA library, and the 1981 bp DNA sequence was identified. VDE cDNA library, and the 1981 bp DNA sequence or antisense nucleic acids (see also T66242-43), in sense or antisense nucleic acids (see also T66242-43), in sense or antisense nucleic acids (see also T66242-43), in sense or antisense nucleic acids (see also T66242-43), in sense or antisense nucleic acids (see also T66242-43), in sense or antisense nucleic acids (see also T66242-43), in sense or antisense nucleic acids (see also T66242-43), in sense or antisense nucleic acids (see also T66242-43), in sense or antisense nucleic acids (see also T66242-43), in sense or antisense nucleic acids (see also T66242-43), in sense or antisense nucleic acids (see also T66242-43), in sense or antisense nucleic acids (see also T66242-43), in sense or antisense nucleic acids (see also T66242-43), in sense or antisense or antisense nucleic acids (see also T66242-43), in sense or antisense nucleic acids (see also T66242-43), in sense or antisense nucleic acids (see also T66242-43), in sense or antisense nucleic acids (see also T66242-43), in sense or antisense nucleic acids (see also T66242-43), in sense or antisense nucleic acids (see also T66242-43), in sense or antisense nucleic acids (see also T66242-43), in sense or antisense nucleic acids (see also T66242-43), in sense or antisense nucleic acids (see also T66242-43), in sense or antisense nucleic acids (see also T66242-43), in sense or antisense nucleic acids (see also T66242-43), in sense or antisense nucleic aci
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                                                                                                                                                                                                                                                                                                                                                                                      DNA encoding plant violaxanthin de-epoxidase - used to modify the sensitivity of a plant to light
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               15-MAY-1997.
07-NOV-1996; U18291.
07-NOV-1995; US-006315.
06-AUG-1996; US-023502.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Bugos RC, Rockhel
WPI; 97-281036/25.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (CALJ ) CALGENE INC.
  disease. Underexpression of VDE increases photosynthetic efficiency under low light. The photosensitivity of a range of crops, trees and crnamentals can be modified. sequence 1981 PP; 608 A; 337 C; 433 G; 577 T;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Rockholm DC, Yamamoto HY;
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610. .
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1020 CÁTAAÁAACTTTGGATGGTGGTTTTTTTACTCGÁTCTGCTGTGCAAACATTTGTTCAAGA 1079
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                    960 TIGICAACTICATGAGTITCATATGGAAAATGATAAACTTGTTGGGAACTTAACATGGCG 1019
                                                                        960 ttgtcaacttcatgagtttcatatggaaaatgataaacttgttgggaacttaacatggcg 1019
                                                                                                              900 AGACTTTAGTGGGAAGTGGTATATAACAAGTGGTTTAAATCCCACATTTGATGCATTTGA 959
                                                                                                                                  Matches 1931; Conservative
                                                                                                                                                                      840 GGATGTGGGTGAATTCCCGGGTTCCGGATCGTAATGCAGTGGTTCAAAATTTTAACATGAA 899
                                                                                                                                                                                                                             720 CAACAATCGTCCTGACGAGACCGAATGTCAGATAAAATGTGGTGACTTGTTCGAAAAACAG 779
                                                                                                                                                                                                                                                                                                     720 caacaatcgtcctgacgagaccgaatgtcagataaaatgtggtgacttgttcgaaaacag 779
                                                                                                                                                                                                                                                                                                                                            660 GCTTGCAAAATGTATAGCAAACCCATCTTGTGCGGCAAACGTTGCCTGTCTACAGACTTG 719
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           240 TÉTTTCCCTTCÁCACCGTATTTCTCTGCAAAGAGGAAGCCCTCAATTTATATGCAAGATC
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  181 TAAGCNUNNAAGTACTCCGATTGTCAGGTGGCCTTTGGAAGCC-ACNNACTGGCTATGGC 239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121 CÁCTTIGAACGCTACAATGTTTTGAANNNGACGTAGATTTTACAAAGACGGAGAAGATAA 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            121 cacttogaacgctacaatgtttgaaaaaagacgcagattttacaaagacggagaagataa 180
                                                                                                                                                                                       AATTINNNNNNACAATTTTCCAATTTCTTCCTCCGCCACACTANNNNNNTACTGTACGC 120
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T66242
ID T6
AC T6
DT 28
DE TC

T66242 standard; cDNA; 1589 BP. T66242;

28-JUL-1997 (first entry)
Tobacco violaxanthin de-epoxidase cDNA.
Violaxanthin de-epoxidase; VDE; light; photosensitivity;

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1980 AA 1981
                                          1920 ttctttaaaacatgtattttttataaatgatgagttattttcaatttttggctaaaaaa 1979
                       1980 aa 1981
                              1920 TICTITAAAACATGTATTITTTATAAATGATGAGTTATTTTCAATTTTTGGCTAAAAAAA 1979
                                                                             1860 CCTTGCCGGTTTGCCGGGTTAGGCCAAATTTTTTGGGGCGGGATCGGTCTTGACCGGGTTT
                                                                                            1800 CTTTACAAAAAATTGATTGTCCATTGGTAGCCAAGAGGTTCACGAAAAGACTGAAAAGG 1859
                                                                                                                                          1740 GTGATAAACGTGTTTGTGATTTGTTTATTGGCTTAAAATTGTAGAATAGCTTTTTTAATT 1799
                                                                                                                                                                                        1680 TATATATAGTCATATGGATTATGTAGATACTAGAGAAAACCCCAAAAAAACTTTTGTATAC 1739
                                                                                                                                                                                                                                             1680 tatatatagtcatatggattatgtagatactagagagaaaacccaaaaaaacttttgtatac 1739
                                                                                                                                                                                                                                                                                        1560 TAAAGAAGAAGAAGAAATTCTGAATGAACTTCAAATGGAAGCGACTGAAGTTGAAAAGCT 1619
                                                                                                                                                                                                                                                                                                                                      1500 GTTGCTTGAAGGGTTTAAGGAGTTGCAACAAGATGAAGAGAATTTTGTGAGGGAGTTGAG
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Bugos RC,
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07-NOV-1995;
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15-MAY-1997.
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                                                                                                                                                                                                                                                                                                                                                                             Sequence
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Sequence 1589
                                                                                                                                                                                                                                                                                                         483 tgaggaaatacaaagatttgatctcaaaaggggcatgactttgattcttgaaaaagcaatg 542
                                                                                                                                                                                                                                                                                          317
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                                                                                                                                                                                                                                                                                        TAAGGGAAATTCAGGATGCAAATTTCCAAAAGATGTAGCTTTGATGGTTTGGGAGAAATG 376
                                                                                                                                                                                                                                                   GGGCCAATTTGCCAAAACAGCAATTGTAGCTATATTCATTTTGTCAGTTGCTTCAAAAGC 436
                                                                                                                                                                                                                                                                    gagacaattcatacaattggctatcgtattggtttgcacatttgttatcgttcccagagt 602
                                                                                                                                                                                     tgcaaaatgtatagcaaacccatcttgtgcggcaaacgttgcctgtctacagacttgcaa
                                                                                                                                                                                                              TGATGCGGTTGATGCTCTCAAGACTTGTACTTGCTTACTGAAAGAGTGCAGGTTAGAGCT
                                                                                                                                                                                                                               tgatgccgttgatgctcttaaaacttgtgcttgtttactcaaagaatgcaggattgagct
                                                                                              caatcytcotyacyayaccyaatytcayataaaatytyytyacttyttcyaaaacaytyt
                                                                                                                                                                       TGCGAAGTGCATTTCGAACCCTGCATGTGCAGCTAATGTTGCCTGTCTCCAGACTTGCAA
                                                                                                                                                                                                                                                                                                                                 862;
                                                                     tgtgggtgaattcccggttccggatcgtaatgcagtggttcaaaattttaacatgaaaga 902
                                   ctttagtgggaagtggtatataaacaagtggtttaaatcctacatttgatgcatttgattg
                                                         TGTTGGTGACTTTCCTGTACCTGATCCCAGTGTTCTTGTCCAGAAGTTTGACATGAAAGA
tcaacttcatgagtttcatatggaaaatgataaacttgttgggaacttaacatggcgcat 1022
                    TTTTAGCGGGAAATGGTTCATTACTCGCGGTTTGAATCCCACTTTTGATGCTTTTGATTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CALGENE INC
                                                                                                                                                                                                                                                                                                                                          Similarity
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BP; 500 A;
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smatches 327;
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Arabidopsis violaxanthin de-epoxidase cDNA.
Violaxanthin de-epoxidase; VDE; light; phot
15-MAY-1997.
07-NOV-1996; U18291.
07-NOV-1995; US-306315
                                                                                                                                                                                                                                                                                                                                              Arabidopsis thal ana cv. columbia
                                                                                              WO9717447-A2.
                                                                                                                                                        mat_peptide
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                                                                                                                                                                                                                                                                                                                                                                                                           photoprotection;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          T66243 standard; cDNA; 1555 BP
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384. .1430
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                                                                                                                                                                                                                                                                                                                          Location/Qualifiers
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                                                                                                                                                                                                                                                                                                                                                                                                                                                              photosensitivity;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                916
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PT DNA Emodding plant violaxanthin de-epoxidase - used to modify the PT sensitivity of a plant to light PS Disclosure; Fig 3: 41pp; English.

CC A cDNA clone (766243) codes for Arabidopsis violaxanthin CC de-epoxidase (VDE) (W09876), an enzyme that catalyses the CC plastidese (VDE) (W09876), an enzyme that catalyses the CC orientation of violaxanthin to zeaxanthin and antheraxanthin. CC orientation, can be used in genetic constructs, pref. also contg. CC plastid translocation sequence, to modify VDE levels in plants. CC light and therefore more productive and/or more resistant to clisatese. Underexpression of VDE increased plate to corops, trees and ornamentals can be modified. The photosensitivity of a range of Sequence 1555 BP; 485 A; 286 C; 375 G; 409 T;
                                                                                                      1147 atattatetteecaaategaaaacaaaecegatgattacatattegtataetaeegaggt 1206
                                                                                                                                                                                                   1087 cttcctggagcactttataatcatgacaatgagtttcttcactaccaagatgactggtac 1146
984 CGAAACGATGCTTGCGATGGATATGGTGCTGCAGTTGTATACACGAGAAGTTCTGTATTA 1043
                                                                                                                                                               864 CAACCTGGTGTTCTCTACAATCATGACAACGAGTACCTTCACTATCAAGATGACTGGTAT
                                                                               804 ACCCTAGACAGTGGATTCTTTACTAGGTCAGCCGTACAAAAATTCGTGCAAGATCCTAAC 863
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    624 GAATTTCCTGCCCCAGACCCTTCTGTTCTTGTACAGAACTTCAACATCTCGGACTTTAAC 683
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      324 TIGCTANAACTCGTGGGTGTTTTAGCTTGCGCGTTCCTTAITGTTCCATCTGCAGATGCA 383
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         550 ttcatacaattggctatcgtattggtttgcacatttgttatcgttcccagagttgatgcc 609
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 06-AUG-1996; US-023502.
(CALJ ) CALGENE INC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            P-PSDB; W09876
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                            cgaaacgacgcatgggatgggtccgtggtcttacacccgaagcccgacactc 1266
                                                                                                                                                                                                                                                                                       actttggatggttgtttctttactcgatctgctgtgcaaacatttgttcaagatccagat 1086
                                                                                                                                                                                                                                                                                                                                                                       catgagtitcatatggaaaatg---ataaacitgtigggaacitaacatggcgcataaaa 1026
                                                                                                                                                                                                                                                                                                                                                                                                                    GGGAAGTGGTACATTACAAGTGGCTTGAATCCAACCTTTGATGCCTTCGACTGCCAGCTG
                                                                                                                                                                                                                                                                                                                                  CATGAGTTCCACACAGAAGGTGACAACAAGCTTGTTGGAAACATCTCTTGGAGAATAAAG 803
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GAGTTCAACGAGTGTGCTGTGTCGAGAAAAAGTGTGTTCCTAGAAAATCTGATCTCGGA 623
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72.5%;
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Pred. No. 7.
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cc can be used for products for diagnosis and therapy. The proteins continuity, haematopoiesis regulating activity, cell proliferation/differentiation cativity, reproductive hormone regulating activity, chemotactic/common regulating activity, receptor/common regulating activity, receptor/common regulation regul
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X41515
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                                                                                                                                                                                                                                                                                                                                                                                                                                            lymphocytes and placental tissue

claim 1; Page 306; 411pp; English.

X41379 to X41526 represent 5' expressed sequence tags (ESTs) for human secreted proteins, and encode the proteins given in X12521 to X12668, respectively. The proteins given represent the signal peptide and an N-terminal fragment of a secreted protein. The nucleic acid sequences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       New nucleic acids encoding human secreted proteins - obtained from cDNA libraries derived from umbilical cord, lymph ganglia,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (GEST) GENSET.
Duclert A, Dumas N
WPI; 99-153783/13.
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31-JUL-1998; IB1237
01-AUG-1997; US-905
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Human secreted protein; 5'EST SEQ ID NO: 174 from WO 9906553. Human; Secreted protein; EST; expressed sequence tag; diagnosis; forensic; gene therapy; chromosome mapping; signal peptide; upstream regulatory sequence; cytokine activity; cell proliferation; differentiation; haematopoiesis regulation; tissue growth regulation; reproductive hormone regulation; chemotactic; chemokinetic; haemostatic; thrombolytic; antiinflammatory; tumour inhibition; antitumour; ds.
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Human secreted protein 5'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1404 AAAGCTTTGCCAATCAGGAAGGTCAGGTAGA 1434
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          11-MAR-1998 (first entry)
Human p160 cDNA 160.1.
p160; p62; cytoplasmic; T cell;
modulation; cellular response; (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1567
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                                                                                                                                                                                                                                                                                                                                                                                                                                                         26-JUN-1997.
11-DEC-1996; U19944.
19-DEC-1995; US-574959.
                                                                                                                                                                                                                                                                                               cDNA encoding p62 and p160 and corresponding proteins - used in the treatment of autoimmune disease and for T and B cell proliferation, e.g. for treatment of tumours claim 82; Fig 8; 175pp; English.
                                                                                                                                                                                                                                                                                                                                                                                             (DAND ) DANA FARBER CANCER INST INC
Joung I, Shin J, Strominger JL,
WPI; 97-341351/31.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Homo sapiens.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         308 GACGCCACCTGAATTAGAAACCAAGRTGAACATAACCAAAGGTGGTCTGGTGTTTWC
p160 polyoptides can modulate degradation of cellular proteins e.g. cell cycle regulatory proteins stimulating expression of cell cycle dependent kinase inhibitors and arresting cell cycle progression at specific boundaries to thereby modulate cell proliferation. As p160 boosts B cell response it may be used to treat disorders where this is beneficial, e.g. infections by pathogenic microorganisms. p160 can be used to expand T cell populations for treating infectious diseases or cancer and p160 cell populations for treating infectious diseases or cancer and p160 cell populations.
                                                                                                                                                                                                                                                                                                                                                                                  P-PSDB; W31185.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WO9722255-A1.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       gagaaggaaattctgaatgaacttcaaatggaagcgactgaagttgaaaagctttttggg 1626
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 gttgaaaaagaggtggagaaggttagagatactgagatgactttgtttcagaggttgctt 1506
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AATGAAGADMATGACAGGCTCTGAAAATTGGAAAACCAAGAAGGTTTTGATGTTTTGTGT 307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   agtcatatggattatgtagatactagagaaaacccaaaaaa 1727
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    h 2.3%;
Similarity 44.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /product= p160
/note= "160.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /*tag=
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 44.6; DB 1;
Pred. No. 0.025;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ; B cell; development; activation; cell proliferation; autoimmune di
                                                                                                                                                                                                                                                                                                                                                                                                                          Vadlamudi RK;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                184; Indels
                                                                                                                                                                                                                                                                                                                                                                  proteins - used in the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 425;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        autoimmune disease;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           QΨ
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           밁
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PI egg for treatment of tumours

PS Claim 82; Fig 10; 175pp; English.

PS Claim 82; Fig 10; 175pp; English.

CC This cDNA sequence encodes a novel p160 (160.2) which is capable cof activating transcription of a variety of genes upon activation of p62 cand is capable of binding to the p62/p561pk complex to modulate Lck capable of binding to the p62/p561pk complex to modulate Lck complex to modulate Include the p62 cand is capable of binding to the p62/p561pk complex to modulate Lck complex to modulate Include the p62 cand is capable of binding to the p62/p561pk complex to modulate Lck complex to modulate Include the p62 cand is capable of binding to the p62/p561pk complex to modulate Include the p62 capable of p62 capable of binding to the p62 capable the p62 capable of the p62 capa
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           inhibitors could reduce B or T cell responses and may be used to treat a variety of autormune diseases, e.g. diabetes mellitus, arthritis, multiple scletosis allergic reactions, Crohn's diseases etc. sequence 3901 BP; 781 A; 1183 C; 1128 G; 809 T;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              W09722255-A1.
26-JUN-1997.
11-DEC-1996; U19844.
19-DEC-1995; US-57498
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        3268 GAAGGTGAGTT) (AGGAAGAAGAAGAAGAGGAGGATGAGGAGGAAGAAGAACTGGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1495 cagaggttgcttmaagggtttaaggagttgcaacaagatgaagagaattttgtgagggag 1554
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Human p160 cDNA 160.2. p160; p62; cytoplasmic; T cell; B cell; development; activation; modulation; cellular response; cell proliferation; autoimmune disease;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             3328 GAGGTGGAAGACCTGGAGTT 3347
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1615 aagctttttgggcgcgcgtt 1634
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      p56-lck; ss
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              11-MAR-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    189346 standard; cDNA; 3211
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          cDNa encoding p62 and p160 and corresponding proteins - used in the treatment of autoimmune disease and for {\tt T} and {\tt B} cell proliferation,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Joung I, Shin J, WPI; 97-341351/31.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  P-PSDB; W31186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DAND ) DANA FARBER CANCER INST INC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GAACAAGAGGAAGAAGAAGAAGAGGAAGACTTTGAGGAAGAGGAAGAGGATGAAGAG 3207
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   gaaaggcttgagaaaacagcggaagagggggagaagttgttgataaaagaagctgtagag 1434
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ttgagtaaagnagagaaggaaattctgaatgaacttcaaatggaagcgactgaagttgaa
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Similarity
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /product= p160
/note= "160.2"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Location/Qualifiers
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Strominger JL,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2.1%;
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Pred. No. 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Vadlamudi RK;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0.22;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                136;
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RESULT
Q11415
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9999
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                misc_rna
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                                                                                                                                                                                                                                                                                     misc_rna
                                                                                                                                                                                                                                                       polya_site
                                                                                                                                                                                                                                                                                                                                                                                     Ryanodine receptor gene. Malignant hyperthermia; hypermetabolic syndrome; inhalation;
                                                                                                                                                                                                                                                                                                            polya_signal
                                                                                                                                                                                                                                                                                                                                                              Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                           reticulum; ss
                                                                                                                                                                                                                                                                                                                                                                                   anaesthetics;
                                                                                                                                                                                                                                                                                                                                                                                                                17-JUN-1991 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                               Q11415 standard; cDNA; 15464 BP Q11415;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2638 GAGGTGGAAGACCTGGAGTT 2657
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1615 aagctttttgggcgcgcgtt 1634
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2458 GAAGAAGAGGAAGAAGAAGAAGAGGAAGACTTTGAGGAAGAGGAAGAAGATGAAGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1435 atagaagaagattgaaaaagaggtggagaaggttagagatactgagatgactttgttt 1494
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1375 gaaaggettgagaaaacageggaagaggegagaagettgttgataaaagaagetgtagag 1434
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            inhibitors could reduce B or T cell responses and may be used to treat wariety of autoimmune diseases, e.g. diabetes mellitus, arthritis, multiple sclerosis allergic reactions, Crohn's diseases etc. Sequence 3211 BP; 649 A; 990 C; 948 G; 624 T;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ttgagtaaagaagaagaagaaattotgaatgaacttcaaatggaagcgactgaagttgaa 1614
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             cagaggttgcttgaagggtttaaggagttgcaacaagatgaagagaaattttgtgagggag 1554
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                124;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                            probe; calcium release channel; sarcoplasmic;
                /label= HRR-3-1200
/note= "1.2 kb; claim 6"
8738. .9778
                                                         /note= "2.4 kb;
9773. .11075
                                                                                                    6349.
                                                                                                                                                                                        400.
                                                                                                            /label= HRR-5
/note= "3.8 ki
                                                                                                                                                       /label= HRR-7A
/note= "2.2 kb
                                                                               /label=
                                                                                                                                                                             /*tag=
                                                                                                                                                                                                                                        /*tag=
                                                                                                                                                                                                                                                                                                           /product= ryanodine receptor 15439. .15446
                                                                                                                                                                                                 /note=
                                                                                                                                                                                                           /label= HRR-7B
                                                                                                                                                                                                                                                                                     15447. .15457
                                                                                                                                                                                                                                                               /label= TG-rich region
                                                                                                                                                                                                                                                                                                                              /*tag=
                                                                                                                                                                                                                                                                                                                                                  Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2.1%;
47.7%;
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.773
                                                                                                  .8717
                                                                                                                                                                                                                                                                                                                                         .15319
                                                                                                                                                                                              "0.4 kb; claim
                                                                             HRR-4
                                                                                                                                                                                                                                                                                                          .15446
                                                                                                                                                      .2 kb;
                                                                                                              кb;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 42.4;
Pred. No. 0
                                                                                                                                                       claim
                                                                  claim
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0,
                                                                                                         Continuation (3 of 10)
WP Sequence split into
WP Fragment Name
        X20248_02
                                                                                                                                                                                                                                                       Qy
                                                                                                                                                                                                                                                                                                                                                                          RESULT
                                                                                                                                                                                                                                                                                                                                                                Purified DNA specific for human ryanodine receptor - useful for diagnosis of malignant melanoma.

The diagnosis of malignant melanoma.

The sequence was obtd. from several overlapping clones isolated from a human skeletal muscle cDNA library in lambda gt10. The gene (located on chromosome 19) encodes the human ryanodine receptor (HRR), a calcium release channel which spans the gap between the transverse tubule and the sarcoplasmic reticulum (SR) in muscle. The sustained muscle contraction in malignant hyperthermia (MH) be caused by the release of calcium into the muscle cell cytoplasm from the SR. This is due to a defect in the gene encoding using FRPL analysis (see tags e-m).

Sequence 15464 BP; 3286 A; 4616 C; 4735 G; 2827 T;
                                                                                                                                                                                                                                                                                                                     Best Loc
Matches
                                                                                                                                                                                                                                                                                                                                          Query Match
                                                                                                                                                                                5868 GAGGAAGGGCTGCTCCAGATGAAGTTGCCAGAGTCTGTGAAGTTACA 5914
                                                                                                                                                                                              1480 gagatgactttgtttcagaggtttgcttgaagggtttaaggagttgca 1526
                                                                                                                                                                                                                        1360 gagcctccattggtggaaaggcttgagaaaacagcggaagaggcgagaagttgttgata 1419
                        X20248_00

X20248_01

X20248_02

X20248_03

X20248_04

X20248_05

X20248_06

X20248_07
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (UTOR) Univ. Toronto Innova.
(TORO-) Toronto Hospital.
Worton RG, Maclennan DH, Britt BA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           04-APR-1991
21-SEP-1990; CA0312.
25-SEP-1989; US-612726.
(HSCR-) HSC R & D Partnership.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WPI; 91-117517/16.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  misc_rna
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                                                                                                                                                                                                                                                                                                                              Local Similarity
                                                                                                                                                                                                                                            aaagaagotgtagagatagaagaagaggttgaaaaagaggtggagaaggttagagatact 1479
                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /note= "2.0 kb;
13826. .15467
                                                                                                                      0f
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /note=
8739. .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /*tag= m
/label= HRR-1
/note= "1.6 kb;
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/note= "3.1 k
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /*tag=
                                                                                                                                                                                                                                                                                                                           2.1%;
            100001
200001
300001
400001
500001
600001
700001
                                                                                                                   X20248 from base fragments LOCUS
   90000
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"1.0 kb; cla
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                                                                                                                                                                                                                                                                                                                  0;
                                                                                                                                                                                                                                                                                                                           Score 42.2; DE
Pred. No. 0.43;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     kb;
410000
510000
610000
710000
810000
910000
910715
                                                                          210000
310000
                                                                                                          End
                                                                                              110000
                                                                                                                                                                                                                                                                                                               Mismatches
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X20248
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                                                                                                                                                                                                                                                                                                                                   DB 1;
                                                                                                               (Borrelia burgdorferi polynucleotid Accession X20248
                                                                                                                                                                                                                                                                                                               78;
                                                                                                                                                                                                                                                                                                                                   Length 15464;
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                                                                                                                                                                                                                                                                                                                                                 Claim 1; Page 43; 50pp; English.

The sequence is that of a nematode-responsive, pref. nematode-induced plant promoter LEMMI 10, which can be isolated from genomic tomato DNA. The promoter is useful in the prodo. of transgenic plants which can produce fixed feeding site cells that can kill, diable or repel nematodes (esp. sedentary endoparasitic nematodes) or are themselves killed or rendered unsuitable for nematodes to feed upon. See also Q3Z652-9.

Sequence 507 BP; 216 A; 64 C; 146 G; 79 T;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LEMMI 10 cDNA.

Nematode; response element; sedentary; endoparasitic; di
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Q32658 standard; cDNA to mRNA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 New nematode-responsive plant promoters, genes, plants and seeds - used to produce transgenic plants that kill, disable or repel nematodes by expressing protein in fixed feeding site cells of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Lycopersicon esculentum W09221757-A.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            914 agtggtatataacaagtggtttaaatcctacatttgatgcatttgattgtcaacttcatg 973
                                                                                                                                                     1434 gatagaagaagattgaaaaagaggtggagaaggttagagatactgagatgactttgtt 1493
                                                                                                                                                                                                                 1374 ggaaaggcttgagaaaacagcggaagaggcgaagatgttgttgataaaagaagctgtaga 1433
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (PLBZ ) PLANT GENETIC SYSTEMS NV.
Inze D, Niebel A, Peferoen M, Var
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            29-MAY-1992; E01214.
30-MAY-1991; EP-401421.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    30-APR-1993 (first entry)
1554 gttgagtaaagaagaaggaaattctgaatgaacttcaaatggaagcgactgaagttga 1613
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                                                                                                                                                                                                                                                                                    Local
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               gagcactttataatcatgacaatgagtttcttcactaccaa
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    atggtggtttctttactcgatctgctgtgcaaacatttgttcaagatccagatcttcctg
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                                                                                  tcagaggttgcttgaagggtttaaggagttgcaacaagatgaagagaattttgtgaggga 1553
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                                                      AGAGTTGTCGGAAGAAGAAGATAATGAAGAAGGATGATAAAGTAGGCAAGAAGAAGGA
                                                                                                                       GGAAAAGAAAAAAAAAAGGATAAAGGAAAAGAAAAGATAAGAGCAAAGAGGAGTCGGAGGA 135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Similarity
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Pred. No. 1.2;
0; Mismatches 112;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        induction;
                                                                                                                                                                                                                                                                     0,
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Van Der Eycken W, Van Montagu M;
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                                                                                                                                                                                                                                                                                                      DB 1;
                                                                                                                                                                                                                                                                       124;
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256 TAAAGAAAAGAMAGTCAAGGCGAATGCGGCTGAAGTCGCCACAAGAGAGCTAGAAGTTGA 315

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  it - for expression of e.g. toxins in the roots of crops susceptible to root diseases susceptible to root diseases susceptible to root diseases susceptible to root diseases placed from the crops the fell genomic clone isolated from DNA from the roots of Brassica napus and containing a promoter sequence upstream from the translation start site. The promoter enhances gene expression in roots and can be used to confer disease resistance or immunity upon a susceptible plant root by transforming the plant with a composite gene capable of abundant expression in the gene, comprising the promoter and the gene of interest. This method can be used to transform plants, partic food crops that have roots susceptible to fingal or insect diseases. The roots of the transformed susceptible to fingal or insect diseases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Genomic clone GIJF, includes a Brassica root specific promoter. Plants; transformation; food crops; toxins; insects; fungal;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Q55750 standard; DNA; 1505
Q55750;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Baszczynski CJ, I
WPI; 94-048877/06
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                                                                                                                                                                                                                                                                                                         1371 ggtggaaaggcrtgagaaaacagcggaagagggcgagaagttgttgataaaagaagctgt 1430
                                                                                                                                                                                                                                                                                                                                                                                                                                   plants express a toxin or substance that provides immunity or to the fungal o: insect diseases. See also Q55749 and Q56913-5. Sequence 1505 BP; 395 A; 201 C; 528 G; 381 T;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       03-FEB-1994.
12-JUL-1993;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      infection; ss.
1116
                                                                                                                                                                                                                                       1431 agagatagaagaagattgaaaaagaggtggagaaggttagagatactgagatgacttt 1490
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                                 1611 tgaaaagctttttgggcgcgcg
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                                                                                                                                                                                                                                                                               876
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                                                                                             ggagttgagtaaagaagagaaggaaattctgaatgaacttcaaatggaagcgactgaagt 1610
                                                                                                                                                                   gtttcagaggttgcttgaagggtttaaggagttgcaacaagatgaagagaattttgtgag 1550
                                                                                                                                                                                                         GGAGGAGGTGUT TGTGGAGGAGCTGGCGCGTGCGCATGGTGGATACGGTGGTGGAGAA 995
                                                                                                                                                                                                                                                                             GGTGGTGGAGCTGGATACGGAGGCGGAGGAGCTGGAGGACATGGTGGAGGTGGAGGAAGC 935
GGAGAAGGCGC" GGTGCTGGAG
                                                                  GGCGGTGGAAATGGAGGCGGTGGAGGAGGTGGACGTGCACACGGTGGTGGATACGGTGGT
                                                                                                                                     GGTGCTGGTGCTGGAGGAGGATATGGAGGTGGCGGTGCAGGTGGACATGGAGGTGGTGGA
                                                                                                                                                                                                                                                                                                                                                 124;
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 1137
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RESULT Q67190

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Best Local
                                                                                                                                                                                                   Sequence split into 17
 V21209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   vectors and transformed cells
Claim 2; Page 24; 63pp; English.
The DNA may be used to express Psf230 in a host cell. It can also be used in vaccines (by incorporation into viral vectors which are then used to infect host cells) and oligonucleotides derived from i can be used to identify homologous proteins in other spp. seguence 9636 Bp; 4156 A; 974 C; 1422 G; 3084 T;
                                                                                                                                                                                                                                                      1156 AA 1157
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18-JAN-1994; U00547.
29-JAN-1993; US-010409.
29-JAN-1993; US-010409.
(USSH ) US DEPT HEALTH & HUMAN SERVICES.
(USSH ) US SEC DEPT HEALTH..
Kaslow DC, Williamson KC;
                                                                                                                         V21209_03
V21209_04
V21209_05
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 New Plasmodium falciparum transmission blocking tai useful in antimalarial vaccines, also related DNA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         P-PSDB; R57474.
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V21209_00
            V21209
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                                                                                                                                                                                                                                                                                          AACAGAAGAACAATTACAAGAGGAACATCAGGAAGAAGTAGGTGCTGAATCTTCAGAAGA 1155
                                                                                                                                                                                                                                                                                                                                                       tgaaaaaqaggtggagaaggttagagatactgagatgactttgtttcagaggttgcttga 1508
                                                                                                                                                                                                                                                                                                          agggtttaaggagttgcaacaagatgaagagaattttgtgagggagttgagtaaaggaaga 1568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     94-264101/32.
 standard; DNA;
                                                                                                                                                                                                                                                                                                                                                                                                                                      Similarity
                                                                                                                                                                                          Name
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Williamson KC;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     transmission blocking target antigen; Psf230; malaria;
                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                transmission blocking target antigen Pfs230 DNA
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1664976
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                                                                                                                                                                                                  LOCUS V21209
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                                                                                                                                                                                                 Accession V21209
                                                                                                                                                                                                                                                                                                                                                                                                                       88;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            target antigen
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             derived from it
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches
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                                                                                                                                                                                                                                                                                                                                                                                                                                            80394 GAAAAATCACTCAAGAACTTTTAAAAGAAATATACTACAGATTAGAAGAGTTAAAAAGAAA 80453
                                                                                                               Computer readable medium; vaccine; S.aureus infection; immunodetection; cellulitis; eyelid infection; food poisoning; osteomyelitis; therapy;
                              misc_feature
                                                                 Staphylococcus aureus
                                                                                                       skin infection;
                                                                                                                                                     Staphylococcus aureus contig SEQ ID #595
                                                                                                                                                                                                                                                                                                                       1570 aaggaaattotgaatgaacttoaaatggaagcgactgaagttgaaaagctttttggg
                                                                                    toxic shock syndrome; ds.
                                                                                                                                                                         16-MAR-1999 (first entry)
                                                                                                                                                                                                V74906;
                                                                                                                                                                                                             V74906 standard; DNA; 1484 BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1450 gaaaaagaggtggagaaggttagagatactgagatgactttgtttcagaggttgcttgaa 1509
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  V21211), can be used in the identification of M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (UNII ) UNIV ILLINOIS FOUND.

(UYJO ) UNIV JOHNS HOPKINS SCHOOL MEDICINE.
Bult CJ, Smith HO, Venter JC, White OR, Woese CR;
WPI; 98-169145/15.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Local 92;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Claim 13; Page 152-585; 614pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Complete genome sequence of methano-genic archaeon, Methanoccoccus jannaschii - useful in identification of M. jannaschii genome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Methanococcus jannaschii circular chromosome.
Methanococcus jannaschii; methanogenic archaeon; circular chromosome;
genome; autotrophic; extrachromosomal element; identification; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   22-AUG-1997; U14'900.
22-AUG-1996; US-024428
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Methanococcus jannaschii.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       tragment
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     10-NOV-1998
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                                                                                                                                                                                                                                                                                                                                                                                                Similarity
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (first entry)
                                                                                                   surgical wound infection; scalded skin
                              Location/Qualifiers 61. .120
             /*tag= a
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  264649 C;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB 1;
1.9;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 110000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  jannaschii
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                                                                                                  syndrome;
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X13039
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So Sequence 1484 BP; 575 A; 190 C; 188 G; 469 T;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local
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                                                                                                                                                                                     1208 gaaa 1211
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anti-S.aureus Accines
Claim 1; Page 1527-1528; 3271pp; English.
Claim 2; Page 1527-1528; 3271pp; English.
Claim 1; Page 1527-1528; 3271pp; English.
Claim 2; Page 1527-1528; 3271pp; English.
Claim 3; Page 1527-1528; 3271pp; English.
Claim 4; Page 1527-1528; 3271pp; English.
Claim 5; Page 1527-1528; 2271pp; English.
Claim 5; Page 1527-1528; 2271pp; 2271pp
                                                                                                                                                                                                                              880 TATTGATTTAATATATATAGACGTGATAATATCAATGTTATATTAAATGAAACGAATTT 939
                                                                                                                    940 GAAA 943
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07-JAN-1997; 100117.
05-JAN-1996; US-009861.
(HUMA-) HUMAN GENOME SCI INC.
Barash C, Choi GH, Dillon PJ, Fannon MR, Kunsch
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Polynucleotide(s) and proteins derived from Staphylococcus aureus stored on computer readable medium and used in the production of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      640 CTAAGAAAAATCAAAAAGAAAAATTTATCAATGCTATTTCTAACCCCTAATAATTCTATGA 699
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  580 GAGATTTACCTATTATAGGAAGCAGTGGTGTTGTTCATAATTTCGACTTTTTTATTAGCG 639
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Rosen
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                                                                                                                                                                                                                                                                                         tattatcttcccaaatcgaaaacaaacccgatgattacatattcgtatactaccgaggtc 1207
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ctttggatggtggtttctttactcgatctgctgtgcaaacatttgttcaagatccagatc 1087
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    grgggaagtggtatataacaagtggtttaaatcctacatttgatgcatttgattgtcaac 967
                                                                                                                                                                                                                                                                                                                                                             TTCTTCATGAAAACTATATTAGTACAATAGATTATAGCGAATTAGATGAAAAGATAGGTT 879
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ttcctggagcactttataatcatgacaatgagtttcttcactaccaagatgactggtaca 1147
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ttcatgagtttcatatggaaaatgataaacttgttgggaacttaacatggcgcataaaaa 102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               gtgaattcccggttccggatcgtaatgcagtggttcaaaattttaacatgaaagacttta 907
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TTATTAAGTCGAAAATAACGGATGCTATGCAAGCAAAAAAATAAAATAAAAGACACAGGCAAA
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2.18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               the sequence listing in the specification. They are included to maintain the nucleotide numbering given in the specification for this DNA sequence"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
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X13039 standard; DNA; 7215 BP

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30-DEC-1998;
18-JUN-1998;
03-SEP-1997;
20-JUN-1997;
22-JUL-1997;
                                                              Borrelia burgdorferi polynucleotide sequence #142.
Borrelia burgdorferi; spirochete; bacterium; pathogen; Lepidemic relapsing fever; endemic relapsing fever; Lyme infection; diagnasis; characterisation; detection; ds.
Borrelia burgdorferi.
                                                        WO9858943-Al.
                                                                                                                          04-MAY-1999
                                                                                                                                                                                                 5887 AAAATAATTTA.CTTTTAGTGAATTGACTGCGTTGTTGAGTGAAAAAGAA
                                                                                                                                                                                                                     1565 aagagaaggaaattctgaatgaacttcaaatggaagcgactgaagttgaa
                                                                                                                                                                                                                                           5827 CTAAAAAAGAGAATGAATTGAAACAAATAGAAGCGGAAATTGTCAGTGCTCTATTAACAG
                                                                                                                                                                                                                                                                                                             1445 aggittgaaaaagaggtggagaaggitagagatactgagatgacittgittcagaggitgc 1504
                                                                                                                                                                                                                                                                                                                                                        1385 agaaaacagcgyaagagggcgagaagttgttgataaaagaagctgtagagatagaagaag 1444
                                                                                                                                            X20389 standard; DNA; 591 BP
                                                                                                                                                                                                                                                                                       5767 GAGTGGAGAAAGAGCTTAATAAAGCCAATGAACGTCTCGATACATTGAAACAGTCGATTG
                                                                                                                                                                                                                                                                                                                                              5707
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06-MAY-1997; US-044031.
16-MAY-1997; US-044655.
(HUMA-) HUMAN GENOME SCI INC.
Barash SC, Dillow PJ, Kunsch CA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 New isolated Enterococcus faecalis polynucleotides and polypeptides used to develor products for the detection of Enterococcus and fouse in vaccines for prevention or attenuation of Enterococcus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Enterococcus faecalis genome contig SEQ ID NO:102. Enterococcus faecalis; contig; detection; Enteroco vaccine; attenua ion; computer readable medium; ds
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Enterococcus faecalis. WO9850555-A2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WPI; 99-045171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               infection
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                                                                                                                                                                                                                                                          ttgaagggtttaaggagttgcaacaagatgaagaagattttgtgagggagttgagtaaag
                                                                                                                                                                                                                                                                                                                                    111;
US-057483.
US-050359.
US-053344.
                                                                                                                                                                                                                                                                                                                                                                                                                                              7215 BP;
                                                                                                                        (first entry)
                                  U12764
                                                                                                                                                                                                                                                                                                                                                                                       Conservative
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48.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                            2685 A;
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Pred. No. 1
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                                                                                    borreliosis;
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Search completed: October 14, 1999, 01:52:18 Job time: 3328 sec
                                                                                                  Д
                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match 2.0
Best Local Similarity 48.3
Matches 111; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                New isolated Borrelia burgdorferi nucleic acids - used to develop products for the detection, diagnosis, characterisation, prevention and therapy of infections, particularly Lyme disease claim 1; Page 1107; 1128pp; English.

20248 to x20402 represent polynucleotide sequences isolated from x20248 to x20402 represent polynucleotide sequences isolated from Borrelia burgdorferi (Bb) Products derived from Bb can be used for the detection, diagnosis, characterisation, prevention and therapy of Bb infections, e.g. Lyme disease. They can also be used for the production of biosynthetic products, e.g. enzymes. Borrelia belongs to a family of motile, spiral-shaped bacteria called Spirochetes are pathogenic in humans and Borrelia causes epidemic and spirochetes are pathogenic in humans and Borrelia causes epidemic and tyme disease.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              22-JUL-1997: US-053377.

(HUMA-) HUMAN GENOME SCI INC.

(MEDI-) MEDIAMUNE INC.

Clayton R, Dougherty BA, Fraser C, Lathigra R, Smith HO,

White OR:
                                                                                                                                                                                                                                                                             1375 gaaaggettgagaaaacageggaagaggegagaagttgttgataaaagaagetgtagag 1434
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Lyme disease.
Sequence 59
                                                                                                                                                                                                      1495 cagaggttgcttgaagggtttaaggagttgcaacaagatgaagagaattttgtgagggag 1554
                                                                                                                               1555 ttgagtaaagaaggaaagttctgaatgaacttcaaatggaagcgac 1604
                                                                                                                                                                                                                                                          475 CTTAAGAAAAAACAACAAGAAGAAGAAGACTTAAGAAAAAAACAACAAGAAGAAGAGCTTAAG 416
                                                                                                                                                                                                                                                                                                                                     535 GAAGAGCTTAAGAAAAAACAACAAGAAGAAGAGCTTAAGAAAAAACAACAAGAAGAAGAG 476
                                                                                                355 CAACAAGAAGAAGAAGAAGAAGAACTAAGAAAACAACTAAAAAATAC 306
                                                                                                                                                                             415 AAAAAACAACAAGAAGAAGAAGATTAAGAAAAAACAACAAGAAGAAGAGCTTAAGAAAAAA 356
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  99-081217/07
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 Mismatches

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                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB 1;
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OM nucleic - nucleic search, using sw model
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Perfect score:
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1981
1 tgtgggttcgaatti
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  2546578 seqs, 986266752 residues
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Copyright (c) 1993 - 1998 Compugen Ltd.
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gb_est28:*
gb_est29:*
gb_est30:*
gb_est31:*
gb_est31:*
em_est20:*
                                                                 gb_est25:*
gb_est26:*
gb_est27:*
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58	57:	56:	55.	54:
st26	st25	5t24		em_est22:*

pred. No. is the number of results predicted by chance to have a . score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

00 00		. c 11111	0 0 4 10 01 04 0	Result No. 1 c 2
	40 40 40 40 40 40 40 40 40 40 40 33	40. 40. 40. 40. 40. 40. 40. 40. 40. 40.	48 42 42 42	Scor 181. 145.
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525 300 300 511 748 300 650 650 527 386	4 / 6 5 5 8 9 2 7 4 2 7 4 7 2 0 4 8 3 4 8 3 5 5 4 4 8 6 7 1 3 3 6 7 1 3 3 6 7 1 3 3 6	557 804 466 766 600 571 549 399	621 650 802 610 465	ngth DE 438 602 584
A17 C53 A12 AA5 C58 AA5 C58 AUC D D33	AU AU AU AU AU AU AU AU AU AU AU AU AU A	AA771 AI324 C8424 AA556 AI397 T4147 AA050 AA117 AA237 AA457 AA79	AA55045 AI05543 AU05172 AU72367 AI61604 W33751	D N37612 AI66822 AI48303
77330 95128 9519 956 956		000 000 000 000 000 000 000 000 000 00	<u>ο</u> φ σ σ ν	ω.ε. ! !
A1721 C12392 A1257 AA550 C5813 C5813 AA870 AU034 D3301	1122 1051 1611 1611 1611 10067	3244 4248 4248 5565 5565 13921 1438 11438 11178 11239 1458 1458 1458 1458 1458 1458 1458 1458	772	
30 fd1 C5392 28 LP(19 161 C581: C54 vq: 06 AUI CELK	2 uc62 6 tc66 1 tt66 1 tt66 2 AU01 2 AU01 2 AU01 2 AU01 1 EST 1 EST 6 EST 3 AU0 CC1178	mo666 84248 393 NCSM ST007 mj09 mo66 mx81 vg60 vg60 vr35	coau001 AU0517 BSBmL3 mq68b0 c55d01.	n .839 Lan 6050181 EST2421
Yuji Yuji 334.5 34.5 m3 gm Yuji Yuji 4306 4306 5A5R 4B6R	55009.x 55009.x 56099.x 57422 57422 7412.r 7412.r 7412.r 7413.r 747235 747235 747235 747235 747235	5. H 5. H 5. H 5. H 5. H	03P 26 26 8.Y 8.Y r1	95000 ·

ALIGNMENTS

VERSION	ACCESSION	RESULT 1 N37612 LOCUS DEFINITION
9113077 N37612.1 GI:1158754	N37612	1 US7612 438 bp mRNA EST 05-JAN-1998 N37612 Arabidopsis thaliana cDNA clone 207C23T7, mRNA segmence.

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ORIGIN
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952 gcatttga-ttgtcaacttcatgagtttcatatggaaa 988
                                                           JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AUTHORS
                                        254 AACATCTCGGACTTTAACGGGAAGTGGTACATTACAAGTGGCTTGAATNCAACCTTTGAT 313
                                                                                                                                   832 oggaaatoggatgigggigaattoooggitooggatogtaatgoagiggitoaaaattitt 891
                                                                                                       194 AGAĀĀĀTĊTGĀTCTCGĠĀGĀĀTTTCCTGCCCCĀGĀCCCTTCTGTTCTTGTĀCĀGĀĀCTTC 253
                                                                                                                                                                       134 GAGAACAGTGTTGTTGATGAGTTCAACGAGTGTGCTGTGTCGAGAAAAAAGTGTGTTCCT 193
                                                                                                                                                                                            ORGANISM
                                                                                                                                                                                                                                                           712 cagacttgcaacaatcgtcctgacgagaccgaatgtcagataaaatgtggtgacttgttc 771
                                                                                                                                                                                                                                                                                                                          652 aggattgagcttgcaaaatgtatagcaaacccatcttgtgcggcaaacgttgcctgtcta 711
                                                                                                                                                                                                                                    74 CAGACCTGCAATAACCGTCCAGATGAAACCGAGTGCCAGATTAAATGTGGGGGATCTGTTT 133
                                                                                                                                                                                                                                                                                                     14 AGGATAGAACTCGCAAAGTGCATTGCCAACCCTGCCTGTGCAGCCAATGTCGCGTGCCTT 73
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      source
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                                                                                                                                                                                                                                                                                                                                                                                             245;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Michigan State University
MSU-DOE-PRL, Michigan State University, Plant Biology Bldg., E.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Newman,T., deBruijn,F.J., Green,P., Keegstra,K., Kende,H., McIntosh,L., Ohlrogge,J., Raikhel,N., Somerville,S., Thomashow,M., Retzel,E. and Somerville,C. denes galore: a summary of methods for accessing results from large-scale partial sequencing of anonymous Arabidopsis cDNA clones plant physiol. 106, 1241-1255 (1994)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 thale cress.
Arabidopsis thaliana
Arabidopsis thaliana
Bukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
euphyllophytes; Spermatophyta; Magnollophyta; eudicotyledons; core
eudicots; Rosidae; eurosids II; Brassicales; Brassicaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Contact: Thomas Newman MSU-DOE Plant Research Laboratory
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          On May 8, 1995 this sequence version replaced gi:799424.
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
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/clone="207C23T7"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /organism="Arabidopsis thaliana"
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                                                                                                                                                                                                                                                                                                                                                                                                 9.18;
                                                                                                                                                                                                                                                                                                                                                                     Score 181.2; DB 24; Length 438;
Pred. No. 1.1e-32;
0; Mismatches 92; Indels 1;
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1572 ggaaattctgaatgaacttcaaatggaagcgactgaagttgaaaagcttttttgggcgcgc 1631
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT
                                                          1452 aaaagaggtggagaaggttagagatactgagatgactttgtttcagaggttgcttgaagg 1511
                                                                                                                                                                                              1392 agcggaagagggcgagagttgttgataaaagaagctgtagagatagaagaagaggttga 1451
                                                                                                                                                                                                                                                              1332 cataacaaccgacaatagttgtgggcctgagcctccattggtggaaaggcttgagaaagc 1391
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     JOURNAL
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                                   372 TCTCATGGAGGTGAAACAGGATTTCATGAACTTCTTGCAGGGGCTGAGCAAGGAGGAGGAT 313
                                                                                                   420 GGAGCTGGAGAAGGAG------GAGGCGTCACTGTTTCAGAAGCTGGCAGAAGG 373
                                                                                                                                                                                                                                                                                                                       ORGANISM
                                                                                                                                                                   480 TGTGGTGGAAGGAGAAGACCATCGTCAGGGAGGTGAAGGAGATCGAGGAGGAGGTTGA 421
                                                                                                                                                                                                                                 540 CATCATGACCGACAACACCTGTGGTCCTGAGCCTCCTCTTGTGGAGAGAATCGAGAAAAC 481
                                                                                                                                                                                                                                                                                                 600 AACAATAATACCGGAGCTGGAAAGAGCTGCAAAGAGCGTAGGTCGGGACTTCTCGACGTT 541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        source
                                                                                                                                                                                                                                                                                                                                                                                                       Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 314 GCCTTCGNCTTGCCANCTGCATGGGTTTCCNACAGGAA 351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Email: walbot@stanford.edu
Plate: 605018 row: D col
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Tel: 650 723 2227 Fax: 650 725 8221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Stanford University
855 California Ave, Palo Alto, CA 94304, USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Unpublished (1999)
On May 18, 1998 this sequence version replaced gi:3137458
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Department of Biological Sciences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Contact: Walbot
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Maize ESTs from various cDNA libraries sequenced at Stanford
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Eukaryota; viridiplantae; Streptophyta; Embryophyta; Tracheophyta; euphyllophytes; Spermatophyta; Magnoliophyta; Liliopsida; Poales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Walbot, V
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Zea mays
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605018D09.x1 605 - Endosperm cDNA library from Schmidt lab Zea mays
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                                                                                                                                                                                                                                                                                                                                                                                   Conservative
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /note="Organ: Kernel; Vector: pAD-GAL4-2'; Site_1: EcoRI; Site_2: XhoI; Kernel endosperm cDNA library from Schmidt
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /db_xref="taxon:4577"
/clone_lib="605 - Endosperm cDNA library from Schmidt lab"
/tissue_type="pericarp, embryo, and endosperm"
/dev_stage="10 days post-pollination"
/lab_host="DH5(alpha)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /cultivar="Ohio43"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /organism="Zea mays"
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                                                                                                                                                                                                                                                                                                                                                                                              7.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 164 c
                                                                                                                                                                                                                                                                                                                                                                                 0;
                                                                                                                                                                                                                                                                                                                                                               Score 145.2; DB 50; Length 602;
Pred. No. 3.2e-24;
0; Mismatches 128; Indels 12; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            117 g
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1632 gttaccgattaggaaacttagata 1655

252 ACTACCGTTGAGGAAGCTAAGGTA 229

AI483033

EST242356 tomato shoot, Cornell Lycopersicon esculentum cDNA clone

12-APR-1999

ACCESSION DEFINITION

cLEB8K10, mRNA sequence

ĀI483033.1 GI:4386957

KEYWORDS VERSION

ORGANISM

Lycopersicon esculentum

tomato

REFERENCE

Potatoe; Lycopersicon.

(bases 1 to 584)

AUTHORS

van der Hoeven,R.S., Matern,A.L., Vision,T., Chandra,I.,
Ronning,C.M., Craven,M.B., Fujii,C.Y., Bowman,C.L., Nierman,W.,
Fraser,C.M., Venter,J.C., Martin,G.B., Giovannoni,J.J. and

Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; eudicotyledons; core euphyllophytes; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Asteridae; euasterids I; Solanales; Solanaceae; Solanum;

COMMENT

TITLE

Generation of ESTs from tomato shoot meristem Unpublished (1999)

Jun 5, 1998 this sequence version replaced gi:3189131

Clemson University Genomics Institute

Clemson University 100 Jordan Hall, C Contact: David Frisch

Clemson, SC 29634, USA

dfrisch@CLEMSON.EDU

Location/Qualifiers

/organism="Lycopersicon esculentum" /cultivar="TA496"

/clone_lib="tomato shoot, Cornell"

cleb8K10"

/map="18DE

/db_xref="taxon:4081"

/tissue_type="shoot meristem" /dev_stage="8 week old plants"

FEATURES

source

ORIGIN BASE COUNT

179

Matches Query Match

137;

TecaT

4.5%; Similarity 63.4%;

Conservative

0; Mismatches

Score 89.6; DB 47; Length 584; pred. No. 3.5e-11; 79;

Indels

0;

Gaps

δã Вр

δÃ g

603 tgatgccgttgatgctcttaaaacttgtgcttgtttactcaaagaatgcaggattgagct 662

489 TGATGCCGTTGATGCTCTAAAACTTGTACTTGCTTACTGAAAGAGTGCAGGATAGAGCT 548

543 gagacaattcatacaattggctatcgtattggtttgcacatttgttatcgttcccagagt 602

В

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/note="Vector: pBK_CMV; Site_1: EcoR1; Site_2: Xho1; CLEB - Tomato Shoot Meristem EST Library. Oligo-dT primed CDNA library made from tomato vegetative shoots including meristems and small expanding leaves."

a 110 c 124 g 171 t
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                                                                                                                                                                                                                                                                                                                      1342 gacaatagttgtyygcctgagcctccattggtggaaaggcttgagaaaacagcggaagag 1401
                                                                                                                                                                                   1402 ggcqagaagttgttgataaaaqaagctgtagagatagaagaagaggttgaaaaagaggtg 1461
                                                        1462 gagaaggttagagatactgagatgactrtgtttcagaggttgcttgaagggtttaaggag 1521
                                                                                                                                                                                                                                                          158 GAGAAAAGTGCAAGTGAAAGTACAGAAGAAATCTGATGAAGAAGAAGTAGAAGAA 217
                                                                                                                           Local Similarity
1605m3 gmbpfHB3.1, G. Roman clone 1605m, mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Coppel,R., Cowman,A., Craig,A., Fischer,K., Foster,J., Goodman,N., Hinterberg,K., Holder,A., Holt,D., Kemp,D., Lanzer,M., Lim,A., Newbold,C., Ravetch,J.V., Reddy,G.R., Rubio,J., Schuster,S.M., Newbold,C., Thompson,J.K., Vital,F., Wellems,T.E. and Werner,E. su,X.-Z., Thompson,J.K., Vital,F., Wellems,T.E. and Werner,E. Current status of the Plasmodium falciparum genome project Current status of the Plasmodium falciparum genome project Mol. Biochem. Parasitol. 79, 1-12 (1996)
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1 (bases 1 to 621)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Department of Pathobiology
University of Florida
2015 SW 15th Ave., Bldg. 1017, Gainesville,
Tel: 352 392 4700
Fax: 352 392 9704
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Dame, J.B., Arnot, D.E., Bourke, P., Chakrabarti, D., Christodoulou, 2.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             On May 8, 1995 this sequence version replaced gi:801278
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Contact: Dame JB
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /note="Vector: pBlueScript SK(+); Genomic DNA, from /note="Vector: pBlueScript SK(+); Genomic DNA, from /note="Vector: pBlueScript SK(+); Genomic DNA, from /note="Vector: Acids Rage parasites of the cloned Honduran asynchronous blood stage parasites of the cultured in vitro, was digested with mung bean HB3 isolate cultured in vitro, was digested with mung bean HB3 isolate at 500C nuclease in the presence of 30% formamide at 500C (Vernick, K.D., Imberski, R.B., and McCutchan, T.F. 1988. (Vernick, R.B., and McCutchan, T.F. 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  244 a
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /clone="1605m"
/clone_lib="gmbPfHB3.1, G. R
/lab_host="E. coli XL1-Blue"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /db_xref="taxon:5833"
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                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 48.6; DB pred. No. 0.14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DB 35; Length 621;
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BASE COUNT
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AUTHORS
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JOURNAL
                                                                                1504 cttgaagggtttaaggagttgcaacaagatgaagagaattttgtgaggagttgagtaaa 1563
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                                                                                                                                                  1444 gaggitgaaaagaggiggagaaggitagagatactgagatgactitgittcagaggitg 1503
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                                                                                                                                                                                                                  1384 gagaaaacagcggaagagggggagaagttgttgataaaagaagagctgtagagatagaagaa 1443
                                                 139
                                                                                                                                                                                   79 GAGAAGAAGAAAGAAAGAAGAAGGATGAGGTAGAAGCTGAAGAATTAGAAGAG 138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         source
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                                                                                                                   338 TGTCCACCTTTAGCACCTATTGTTGATGAAGACTTATCTGATGAAGTGTTAGAAGAAATT 397
                                                                                                                                                                                                                                                                                   118;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         High quality sequence stop: 276.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Clemson University
100 Jordan Hall, Clemson, SC 29634, USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Clemson University Genomics Institute
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Contact: Wing RA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              on Sep 12, 1996 this sequence version replaced gi:1397653
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Unpublished
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Cotton EST Database: Sequence Analysis of 2000 cDNA Clones from an
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; euphyllophytes; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae; eurosids II; Malvales; Malvaceae; Gossypium.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gossypium hirsutum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AI055436 650 bp mRNA EST 16-JUL-1998 coau0003P24 Cotton Boll Abscission Zone cDNA Library Gossypium irania cDNA clone coau0003P24 5', mRNA sequence.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      il: rwing@clemson.edu
primer: SP030 (AACAGCTATGACCATGATTA)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                864 656 7288
864 656 4293
                                                                                                                                                                                                                                                                                                                                                              note "Vector: Uni-ZAP XR; Site_1: EcoRI; Site_2: XhoI;
This is a Uni-ZAP XR custom cDNA library made by
Stratagene (U.S.A.: 1-800-424-5444): Stratagene cat.
#837201."
3 5 c 206 g 61 t 9 others
                                                                                                                                                                                                                                                                                                                                                                                                                                                      /lab_host="XL1-Blue MRF/"
                                                                                                                                                                                                                                                                                                                                                                                                                                                          /clone_lib="Cotton Boll Abscission Zone cDNA Library"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /clone="coau0003P24"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /organism="Gossypium hirsutum"
/db_xref="taxon:3635"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Location/Qualifiers
                                                                                                                                                                                                                                                                         2.4%; Score 48.4; DB 41; Length 650; 50.4%; Pred. No. 0.16;
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AU051726
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                              1505 tt 1506
                                                           1445 aggttgaaaaagaggtggagaaggttagagatactgagatgactttgtttcagaggttgc 1504
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411 TT 412
                                       351 AGATTGAAAAGGAGCTGGAGACAGTTTGCAATGATGNCTTGGCTCTGCTTGACAAGTTCC 410
                                                                                                        291 AGAAAACCATGGCAGATGGGAATGAGAAGAAGTTGGAGAAAGTTAAAAGCCTACCGGGAGG 350
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                                                                                                                                                                                                                  Local
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                                                                                                                                                                                                           Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Contact: Katsuyuki Hashimoto
Division of Genetic Resources
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On Jun 22, 1998 this sequence version replaced gi:3247195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Seq primer:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    National Institute of Infectious Diseases 23-1, Toyama 1-chome, Shinjuku-ku, Tokyo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sasaki,M., Suzuki,Y., Watanabe,M., Imai,J., Shibui,A., Yoshida,K., Hata,H., Yamaguchi,R., Tateyama,S. and Sugano,S. Construction of mouse full length-enriched cDNA libraries by
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Eukaryota: Metazoa; Chordata; Craniata; Vertebrata; Mammalia;
Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
1 (bases 1 to 802)
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                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 http://www.nih.go.jp/yoken/genbank/
primer: 5' end primer: CTTCTGCTCTAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       kĥashi@nih.go.jp
                                                                                                                                                                                                                                                                  igated to a Draili adaptor [TGTTGGCTACTGG], digested and cloned into dstinct Draili sites of the pME185-FL3. Shol sites just outside the Draili sites can be used to exclude fragments <1.5 kb. Library was constructed by Science). Custom primer for sequencing: 5' end primer [CTTCTGCTCTAAAAGCTGCG]"

a 174 c 204 g 187 t 40 others
                                                                                                                                                                                                                                                                                                                                                                                                                  /note="Organ: brain; Vector: pME18S-FL3; 1st strand cDNA was primed with an oligo(dT) primer [ATGTGGCCTTTTTTTTTTTTTTTTTTTTTT] double-stranded cDNA was
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /dev_stage="adult"
/lab_host="TOP10"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /sex="female"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /clone_lib="Sugano mouse brain mncb"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /clone="MNCb-2376"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /db_xref="taxon:10090"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /strain="C57BL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /organism="Mus musculus"
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                                                                                                                                                                                                     2.2%;
59.0%;
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                                                                                                                                                                                  b; Score 42.6; DB
b; Pred. No. 3.7;
0; Mismatches
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                                                                                                                                                                                                         _DB 47; Length 802;
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                                                                                                                                                       1360 gagcctccattggtggaaaggcttgagaaaacagcggaagagggcgagaagttgttgata 1419
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           source
                                              1420 aaagaagctgtagagatagaagaaggttgaaaaagaggtggagaaggttagagatact 1479
290 GATGATAGTGAGAAAGAGGAGGATGAAGACGAGGATG----GTAGTGAAGAAGAAAG 345
                                                                                                        Local
                                                                                                                                                                                                                 131;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EST submitted by Molecular Parasitology Group, New England Biolabs, Inc., 32 Tozer Road, Beverly, MA. 01915, USA. Email: dnaseq@neb.com. SZ in the clone designation, refers to 'Subtracted Method Z'. The numerical designation after the SZ refers to the microtiter tray number (01 - 48) followed by the letter and number of the microtiter tray position. Method 'Z' refers to sequenced clones which have been selected after hybridization subtraction using highly redundant clones present in the gridded library (18,000 mass-excised colonies gridded as a high density array on pylon filters). Colonies not represented in the probe sets were
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              BSBmL3SZ45B6SK Brugia malayi infective larva cDNA (SAW94WL-BmL3) Brugia malayi cDNA clone BSBmL3SZ45B6SK 5', mRNA sequence. AI723679
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Molecular Parasitology
Smith College Department of Biological Sciences
Department of Biological Sciences, Clark Science Center, Smith
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Eukaryota; Metazoa; Nematoda; Secernentea; Spiruria; Filarioidea; Onchocercidae; Brugia.
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Brugia malayi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Fax: 4135853786
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Contact: Steven A. Williams
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Williams, S.A.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Seq primer: pBluescript SK.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            College, Northampton, MA, 01063, USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AI723679.1 GI:5042543
                                                                                                                                                                                                                                       Similarity
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                                                                                                                                                                                                                                                                                                                                                                            246
                                                                                                                                                                                                                 Conservative
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    genome@smith.edu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      20, 1995 this sequence version replaced gi:1133752
                                                                                                                                                                                                                                                                                                                                                                            ø
                                                                                                                                                                                                                                                                                                                                                                 /note="vector: lambda Unizap XR; Site_1: EcoR I; Site_2: Xho I; Lymphatic filarial nematode parasite of humans. mRNA was prepared from third stage infective larvae of Brugia malayi isolated from mosquitoes 10 days after infection and converted to double stranded cDNA using reverse transcriptase and oligo(dT) followed by RNase H and DNApol I. The library had 1.5 x 1025 independent recombinants and average insert size was 900 base pairs. The library was constructed by Wenhong Lu. The library is available from Dr. S.A. Williams, email genome@smith.edu." a vailable from Dr. S.A. Williams, email genome@smith.edu."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /clone_lib="Brugia malayi infective larva cDNA
(SAW94WL-BmL3)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /strain="TRS Labs"
/db_xref="taxon:6279"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /lab_host="XL1-Blue MRF/"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /clone="BSBmL3SZ45B6SK"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /organism="Brugia malayi"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ocation/Qualifiers
                                                                                                                                                                                                                                  2.2%;
                                                                                                                                                                                                            Score 42.6; DF Pred. No. 3.6; 0; Mismatches
                                                                                                                                                                                                                                    3.6;
                                                                                                                                                                                                                                                                DB 51;
                                                                                                                                                                                                              124;
                                                                                                                                                                                                                                                                Length 610;
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RESULT 8
AI616040/c
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BASE COUNT
ORIGIN
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            gcgactgaagt:gaaaagc 1618
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GAGGATGATAGTGAAGAGAAGAAGATGAAGAAGAAGATCAGGATGATAGTGAAGAGAAC 465
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AGGATGAAGATGATGATTATCCACGACGACAGTGATGAGAAAGAGGAGGATGAAGAC 405
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Marria,M., Hillier,L., Kucaba,T., Martin,J., Beck,C., Wylie,T., Underwood,K., Steptoe,M., Theising,B., Allen,M., Bowers,Y., Person,B., Swaller,T., Gibbons,M., Pape,D., Harvey,N., Schurk,R. Ritter,E., Swan,T., Jackson,Y., Cardenas,M., McCann,R.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           mq68b08.yl Soares 2NbMT Mus musculus cDNA clone IMAGE:583863 5',
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             This clone is available royalty-free through LLNL; contact the IMAGE Consortium (info@image.llnl.gow) for further information. This read is a RESEQUENCE of a previously sequenced mouse clone This read has been verified (found to hit its original self in the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   On Jun 5, 1998 this sequence version replaced gi:3188053
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Unpublished (1999)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Waterston, R. and Wilson, R. The WashU-NCI Mouse EST Project 1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mus musculus
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       correct orientation
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          4444 Forest Park Parkway, Box 8501, St. Louis, MO 63108, USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Washington University School of Medicine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Contact: Marra M/WashU-NCI Mouse EST Project 1999
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            quality sequence stop: 453.
                   50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          monseest@watson.wustl.edu
                                                                                                                              and Eco RI sites of the modified pT7T3 vector. RNA provided by Dr. Bertrand Jordan. Library went through two rounds of normalization, and was constructed by Bento soares and M.Fatima Bonaldo."
                                                                                                                                                                                                                                                                                                                                                                                                          /organism="Mus musculus"
/strain="C57BL/6J"
/db_xref="taxon:10090"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Location/Qualifiers
                                                                                                                                                                                                                                                                                                                 /tissue_type="Thymus"
                                                                                                                                                                                                                                                                                                                                              /sex="male"
                                                                                                                                                                                                                                                                                                                                                                   /clone_lib="Soares 2NbMT"
                                                                                                                                                                                                                                                                                                                                                                                           /clone="IMAGE:583863"
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FEATURES
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W33751
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GATGAAGACAAAGATGAAGA 187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  gagtaaagaagaaggaaa 1576
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 gaggttgcttgaagggtttaaggagttgcaacaagatgaagagaattttgtgagggagtt 1556
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W33751.1
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                            WashU HHMI Mouse EST Project
Washington University School of MedicineP
4444 Forest Park Parkway, Box 8501, St. L
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Marra,M., Hillier,L., Allen,M., Bowles,M., Dietrich,N., Dubuque, Geisel,S., Kucaba,T., Lacy,M., Le,M., Martin,J., Morris,M., Schellenberg,K., Steptoe,M., Tan,F., Underwood,K., Moore,B., Theising,B., Wylie,T., Lennon,G., Soares,B., Wilson,R. and Waterston,R.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Unpublished (1996)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (HUMAN);, mRNA sequence. W33751
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     W33751
                                                                                                                                                                                                                                                                                                           High quality sequence stop: 440
                                                                                                                                                                                                                                                                                                                                                                                               Email: mouseest@watson.wustl.edu
This clone is available royalty-free through LLNL ;
                                                                                                                                                                                                                                                                                                                                                                                                                                          Tel: 314 286 1800
Fax: 314 286 1810
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus. 1 (bases 1 to 524)
                                                                                                                                                                                                                                                                                                                                                                          IMAGE Consortium (info@image.llnl.gov) for further information.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Contact: Marra M/Mouse EST Project
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                                                                                                                                                                                                                                                                                                                                 primer: ETPrimer
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/note="Vector: pT7T3D-Pac (Pharmacia) with a modified polylinker; Site_1: Not I; Site_2: Eco RI; 1st strand was primed with a Not I - oligo(dT) primer [5'
                                                               /tissue_type="embryo"
/dev_stage="13.5-14.5dpc total fetus"
/lab_host="DHIOB"
                                                                                                                                                                            /strain="C57BL/6J"
/db_xref="taxon:10090"
/clone="IMAGE:352417"
                                                                                                                                     /sex="unknown
                                                                                                                                                                                                                                              /organism="Mus musculus"
                                                                                                                                                   /clone_lib="Soares mouse embryo NbME13.5 14.5"
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54.08;
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RESULT 1
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Butheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus. 1 (bases 1 to 557)

Marra,M., Hillier,L., Allen,M., Bowles,M., Dietrich,N., Dubuque,T., Geisel,S., Kucaba,T., Lacy,M., Le,M., Martin,J., Morris,M., Schellenberg,K., Steptoe,M., Tan,F., Underwood,K., Moore,B., Theising,B., Wylie,T., Lennon,G., Soares,B., Wilson,R. and Waterston,R.
                                                                                                                                            Seq primer: -28m13 rev2 ET from High quality sequence stop: 229.
                                                                                                                                                                                                                          Email: mouseest@watson.wustl.edu
This clone is available royalty-free through LLNL ;
                                                                                                                                                                                                                                                                   Tel: 314 286 1800
Fax: 314 286 1810
                                                                                                                                                                                                                                                                                                       Contact: Marra M/Mouse EST Project
WashU-HHMI Mouse EST Project
Washington University School of Medicinep
4444 Forest Park Parkway, Box 8501, St. Lo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mus musculus
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      vt16a09.rl Barstead mouse myotubes MPLRB5 Mus musculus cDNA clone IMAGE:1163224 5' similar to gb:L20422 14-3-3 PROTEIN ETA (HUMAN);
                                                                                                                                                                                                                                                                                                                                                                                                            On Sep 12, 1996 this sequence version replaced
                                                                                                                                                                                                                                                                                                                                                                                                                               Unpublished (1996)
                                                                                                                                                                                                                                                                                                                                                                                                                                                 The WashU-HHMI Mouse EST Project
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                                                                                                                                                                                                       IMAGE Consortium (info@image.llnl.gov)
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/clone="IMAGE:1163224"
/clone_lib="Barstead mouse myotubes MPLRB5"
                                                                   /strain="C3H"
                                                                                                                           Location/Qualifiers
                                                                                   organism="Mus musculus"
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Pred. No. 4.9;
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                                                                                                                                                                                                         further information.
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Local Similarity 59.0%;
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1 (bases 1 to 804)
Marra,M., Hillier,L., Allen,M., Bowles,M., Dietrich,N., Dubuque,T., Geisel,S., Kucaba,T., Lacy,M., Le,M., Martin,J., Morris,M., Schellenberg,K., Steptoe,M., Tan,F., Underwood,K., Moore,B., Theising,B., Wylie,T., Lennon,G., Soares,B., Wilson,R. and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             mc06605.yl Stratagene mouse heart (#937316) Mus musculus cDNA clone IMAGE:558536 5' similar to gb:L20422 14-3-3 PROTEIN ETA (HUMAN).
                        correct orientation)
Seg primer: -40RP from Gibco
                                                            This read is a RESEQUENCE of a previously sequenced mouse clone This read has been verified (found to hit its original self in the
                                                                                                                               Email: mouseest@watson.wustl.edu
This clone is available royalty-free through LLNL; contact the
IMAGE Consortium (info@image.llnl.gov) for further information.
                                                                                                                                                                                                            Tel: 314 286 1800 Fax: 314 286 1810
                                                                                                                                                                                                                                                     Contact: Marra M/Mouse EST project
WashU-HHM Mouse EST Project
Washington University School of Medicinep
4444 Forest Park Parkway, Box 8501, St. Louis, MO 63108
High quality sequence stop: 331
                                                                                                                                                                                                                                                                                                                                                                                                 Unpublished (1996)
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                                                                                                                                                                                                                                  1 (bases 1 to 466)
1 (bases 1 to 466)
Ochiai,H., Morio,T. and Urushihara,H.
Developmental cDNA in Dictyostelium discoideum (46)
Unpublished (1997)
On Jan 19, 1998 this sequence version replaced gi:2284815.
                                                                                                                                                                                                                                                                                                                                                                                       g2723854
C84248.1
                                                                                                                                                            University of Tsukuba
3-3-10 Ten-nodai, Tsukuba, Ibaraki 305,
                                                                                                                                                                                                                                                                                                                                                                                                                               C84248 Dictyostelium discoideum SS (H.Urushihara) Dictyostelium discoideum cDNA clone SSB385, mRNA sequence.
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Dictyostelium discoideum
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                                                                                                                                                                                                Institute of Biological
                                                                                                                                                                                                                Contact: Hideko Urushihara
                                                                                                                                                                                                                                                                                                                           Eukaryota;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /?lone_lib="Dictyostelium discoideum SS (H.Urushihara)"
/dev_stage="slug"
35 c 56 g 152 t 3 others
                                                        /db_xref="taxon:44689"
/clone="SSB385"
                                                                                        'strain="AX4"
                                                                                                     /organism="Dictyostelium
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                132;
                                                                                                                                                                                                                                                                                                                                                                                                Forest Biotechnology Group
North Carolina State University
Dept. of Forestry, NC State University, 6113
Raleigh, NC, 27695-8008
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AA556538 766
393 Loblolly pine
AA556538
                                                                                                                                                                                                                                                                                                                                                                                      Raleigh, NC, 27695
Tel: 919-515-7800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Allona, I., Quinn, M., Shoop, E., Swope, K., St.Cyr, S., Carlis, J., Riedl, J., Retzel, E., Campbell, M., Sederoff, R. and Whetten, R.W. Analysis of xylem formation in pine by cDNA sequencing Proc. Natl. Acad. Sci. U.S.A. 95 (16), 9693-9698 (1998)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Pinaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
euphyllophytes; Spermatophyta; Coniferopsida; Coniferales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pinus taeda
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Contact: Ross Whetten
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              On Sep 12, 1996 this sequence version replaced gi:1393611
                                                                                                                                                                                                                                                                                                                                                  Email: rosswhet@unity.ncsu.edu
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ilarity 46.2%;
Conservative
                                                                                                                                                                                                                                                                                                                                                                     919-515-780
                                      ω
                                                                                     /note="Vector: lambda-ZAP; Site_1: EccRI; Site_2: XhoI; The library was made from immature xylem from the underside of inclined stems of differentiating wood. A mixture of four genetypes were used. Oligo-dT prime cDNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   pine.
                                                                        was directionally cloned into the EcoRI-XhoI lambda-ZAP
                                                                                                                                                                                                                  /organism="Pinus taeda"
/strain="Coastal plain loblolly pine
/db_xref="taxon:3352"
/clone="3C2D"
                                                     vector arms"
                                                                                                                                                              /clone_lib="Loblolly pine
/tissue_type="Xylem"
/lab_host="SOLR"
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Pred. No. 9.3;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AI392172 600 bp mRNA LSI CIONE SM3A6 NCSM3A6T7 Subtracted Mycelial Neurospora crassa cDNA clone SM3A6 similar to uridine kinase, S. cerevisiae, mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Leonard, P.M., Mitchell, J., Armijo, A.M., Bean, L., Blueyes, E., Cushing, T., Errett, A., Fleharty, M., Gorman, M., Judson, K., Miller, R., Ortega, J., Pavlova, T., Perea, J., Todisco, S., Trujillo, R., Valentine, J., Wells, A., Werner-Washburne, M., Vazzie, S.
                                                                                                                                                                                                                                                                                                                                                                            Castetter Hall, Albuquerque,
                                                                                                                                                                                                                                                                                                                                                                                           Department of Biology
University of New Mexico
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             On Jan 14, 1998 this sequence version replaced
                                                                                                                                                                                                                                                                                                                                                                                                                                            Contact: Natvig, D.O./Nelson, M.A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Expressed sequences from conidial, mycelial,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          and Natvig, D.O.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Nelson, M.A., Kang, S., Braun, E.L., Crawford, M.E.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sordariales;
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505 277 0304
                                                                                                                                                                                                                                                                                                       ngp@biology.unm.edu.
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                                                                                                                                                                /db_xref="taxon:5141"
/clone="cw>>~"
                                    /dev_stage="Mycelium"
/lab_host="E. coli"
/hote="Vector: pBlueScript SK (-); Site_1: EcoRI; Site_2: XhoI; 2% sucrose for 24 hours. cDNA directionally cloned
                                                                                      /clone_lib="Subtracted Mycelial
/sex="Mating type A"
/tissue_type="Mycelium"
                                                                                                                                                                                                         /organism="Neurospora crassa"
/strain="74-OR23-IV A (FGSC 2
                                                                                                                                                                                                                                                                                 Location/Qualifiers
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Identification of CDNA clones encoding valosin-containing protioned other plant plasma membrane associated proteins by general and other plant plasma membrane associated proteins by general
                                                                                                                                                                                                                                                                                                                                                                                                                                                           Plant Biology Division
The Samuel Roberts Noble Foundation, Inc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Other_ESTs: EST060
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Proc. Natl. Acad. Sci. U.S.A. 92,
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  T41438 267 bp mRNA EST 20-JUL-1995 EST007 Soybean, M Bhattacharyya Glycine max cDNA clone SPM1 5',
                                                                                                                                                                                                                                                                                                                                                      Seq primer:
                                                                                                                                                                                                                                                                                                                                                                                                                                   2510 Sam Noble Parkway, Ardmore,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Contact: Madan Bhattacharyya
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (bases 1 to 267)
                     123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              125 a
                                                                                                                                                                                                                                                                                                                                                                                                  4052217380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                          madan@aardvark.ucs.uoknor.edu
                   þ
        /Clone_lib="Soybean, M Bhattacharyya"
/note="Vector: Uni-ZAP; Site_1: ECORI; Site_2: XhoI; mRNA
was purified from soybean etiolated hypocotyls. cDNA was
constructed using an XhoI/Oligo (dT) linker/primer and
cloned unidirectionally into the EcoRI and XhoI sites of
the lambda phage Uni-ZAP (Stratagene). The library was
screened using an anti-plasma membrane serus preabsorbed
with an E. coli/phage lysate."
                                                                                                                                                                                                                                             /organism="Glycine max"
/strain="cv Williams 82"
/db_xref="taxon:3847"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   into pBluescript SK(-) using the Uni-ZAP XR vector system (Stratagene, La Jolla, CA). Previously identified highly expressed clones were subtracted from this library."

a 215 c 102 g 158 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GI:957381
                                                                                                                                                                                                       /clone="SPM1"
                                                                                                                                                                                                                                                                                                                                  location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2.0%;

 Mismatches

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 40.6; DB 45; Pred. No. 11;
                                                                                                                                                                                                                                                                                                                                                                                                                                          OK,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                4457-4461 (1995)
                                                                                                                                                                                                                                                                                                                                                                                                                                       73401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               34;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0
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Best Local Similarity

2.0%;

Score 40.4; Pred. No. 11;

DB 20;

Length 267;

Query Match

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                                                                                                           QΥ
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                                                                                                                                                                                                                                                                  QΥ
                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                        1445 aggttgaaaaagaggtggagaaggttagagatactgagatgactttgtttcagaggttgc 1504
                                                                                                                                                                                                                                                        1385 agaaaacagcgcaaagagggcgagaagttgttgataaaagaagctgtagagatagaagaag 1444
                                   1565 aagagaaggaaitt 1578
                                                                                             1505 ttgaagggtttaaggagttgcaacaagatgaagagaattttgtgagggagttgagtaaag 1564
                                                                     166 CAGAAGAGAAG:\AGGAAGCTGAAGTCATAGAAGAAGAAGAAGGAAGTGGAAGTGACGGAAG 225
                                                                                                                                              106 AAGTCATAGAAGAAGAAGGAAGTGGAAGTGACGGAAGAAGAAGGAAATTGAAGTAA 165
226 AGAAGAAGGAANTT 239
                                                                                                                                                                                                                              46
                                                                                                                                                                                                                          AGAAACCAGCAGCAGAAGAAGGAAGGAAGGAAGGTTGAAGTGACAGAAGGGAAGAAGCTG 105
                                                                                                                                                                                                                                                                                                       98;
                                                                                                                                                                                                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                     0;
                                                                                                                                                                                                                                                                                                     Mismatches
                                                                                                                                                                                                                                                                                                   96;
                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                   0;
                                                                                                                                                                                                                                                                                                   Gaps
```

Search completed: October 13, 1999, 18:23:30 Job time: 2498 sec

.

Title: Perfect score: Sequence:

US-09-075-375-2 7495

MALSIHTVFLCKEEALNIYA.....MEASEVEKLFGKALPIRKVR 1412

BLOSUM62

Database Searched: Scoring table:

A_Geneseq_36:*

188963 seqs, 23686106 residues

pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

OM protein

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protein search, using sw model

GenCore version 4.5 Copyright (c) 1993 - 1998 Comp

Compugen Ltd

October 14, 1999, 03:11:17; Search time 34.13 Seconds (without alignments) 979.923 Million cell updates/sec

Result No.

Score

Match Query

Length

DB

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132 129.5 129 129 129 124

2954 1654 993 1582 1498 1132

121

147 135.5 135.5

2482 1312 1312 968 1639 776

p85alpha-green flo P. falciparum synt

Human RAD50.

Human

homologue of Human

Human mitosin. Arabidopsis violax

falciparum live

Human mitosin amin

p. falciparum synt Lethal factor of B

Amino acid sequenc

Sequence of the Pl Pre-nisin modifica

Nucleolar/endosoma TNF-R-EBA 175 fusi Chicken Leucocytoz Rat sulphonylurea

Rat sulphonylurea

R60178

34.1 33.3 32.2 2.0 2.0 2.0

W09875 W09874 W09876 W24790

Tobacco violaxanth Romaine lettuce vi

Description

W90005 W98879 R99795

111.5 111.5 111.5 110.5 110.5 110.5 110.5 110.5 110.5

3248 649 1130 2329 3418 3418 3418 1164 1164 1164 1128 11093 11093

CD4-EBA175 fusion

Human BRCA2 (omi4)

W40540

121 119.5 119.5 119 119 118.5 115.5 115.5 115.5 115.5

1411 1604 1099 1135 905 2273 1130 3110

W40538 W31185 W31186

Silaic acid bindin

Kinetochore protei

Expressed antigen

Merosin major subu

44

110 109.5

1392 933

ب ب

Y06999 W98599

Restin protein seq H. pylori GHPO 127

ALIGNMENTS

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Mutant C-beta prot
Human p160 polypep
Human p160 polypep
Erysiphe graminis
Mutant C-beta prot
Mutant C-beta prot
Mutant C-beta prot
Mutant C-beta prot
H. pylori GHPO 325
                                                                                                                                                                             Potato tuber solub
H. pylori GHPO 175
                                                                                                                                                                                                                     Merosin major subu
P. falciparum SABP
                                                                                                              Merosin M polypept
Partial BRCA2 canc
Human breast and o
                                                 Group B streptococ
                                                               Group B Streptococ
                                                                                       Human BRCA2 (omil)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   W09875
    TETT FIT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Tobacco violaxanthin de-epoxidase.
Violaxanthin de-epoxidase: VDE; light; photosensitivity;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             W09875;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      W09875 standard; Protein; 478
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           photoprotection; transgenic plant;
xanthophyll; tobacco.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 28-JUL-1997
                                                                                                                                                 07-NOV-1996; U18291.
07-NOV-1995; US-06315.
06-AUG-1996; US-023502.
(CALJ) CALGENE ENC.
Bugos RC, Rcckholm DC,
WPI; 97-281035/25.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   misc_difference 141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           domain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            protein
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misc_difference 171
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misc_difference 161
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          misc_difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   misc_difference 148
             pan encoding plant violaxanthin de-epoxidase - used to modify the sensitivity of a plant to light sensitivity of a plant to light pisclosure; Fig 2; Alpp; English.

The 55 kDa violaxanthin de-epoxidase (VDE) (W09875) of tobacco cattalyses the de-epoxidation of violaxanthin to zeaxanthin and cattalyses the de-epoxidation of violaxanthin to zeaxanthin and entheraxanthin. This system, termed energy dependent non-radiative energy dissipation or non-photochemical fluorescence quenching, energy dissipation or non-photochemical fluorescence quenching to reduces the quantum efficiency of photosystem II (PSII), helping to prevent PSII over reduction and photoinhibitory damage. The amino prevent PSII over reduction and photoinhibitory damage.
                                                                                                                                                                                                                                                                                                                                                                        misc_difference 184
                                                                                                                                                                                                                                                                                                                                                                                                                                                      misc_difference | 67
                                                                                                                                                                                                                                                                                                                       misc_difference 206
                                                                                                                                                                                                                                                                                                                                               misc_difference 190
                                                                                                                                                                                                                                                                                                                                                                                                   misc_difference 1:0
                                                                                                                                                                                                                                           WO9717447-A2.
                                                                                                                                                                                                                                                                     misc_difference
                                                                                                                                                                                                                                                                                            misc_difference
     acid sequence of the VDE was deduced from an isolated
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /note= "conserved Cys residue"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   585
                                                                                                                                                                                                                                                                                                 /note=
252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /label= Highly-charged_domain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /label= Mat_protein
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ocation/Qualifiers
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                                                                                                                                                                                                                                                         /note= "conserved Cys residue"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           label= Transit_peptide
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             .478
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "conserved Cys residue"
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                                                                                                                                                                                                                                                                                                                                                                                           "conserved Cys residue"
                                                                                                                                                                                                                                                                                                                                                                                                                                              "conserved
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                                                                                                                                                                                                                                                                                    "conserved
                                                                                                                                                                                                                                                                                                                                       "conserved Cys residue"
                                                                                                                                                                                                                                                                                                             "conserved Cys residue"
                                                                                                                                                                   Yamamoto HY;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              zeaxanthin; antheraxanthin;
                                                                                                                                                                                                                                                                                      Cys
                                                                                                                                                                                                                                                                                                                                                                                                                     Cys residue"
                                                                                                                                                                                                                                                                                                                                                                                                                                              Cys residue
                                                                                                                                                                                                                                                                                                                                                                    residue"
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W0987
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Best Local
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peptide
                             peptide
                                                          domain
                                                                                     peptide
                                                                                                                 domain
                                                                                                                                             peptide
                                                                                                                                                                          protein
                                                                                                                                                                                                                                                          photoprotection;
                                                                                                                                                                                                                                                                     Violaxanthin de-epoxidase; VDE;
                                                                                                                                                                                                                                                                               Romaine lettuce violaxanthin de-epoxidase
                                                                                                                                                                                                    peptide
                                                                                                                                                                                                                                 Lactuca
                                                                                                                                                                                                                                                                                                28-JUL-1997 (first entry)
                                                                                                                                                                                                                                                                                                                         W09874 standard; Protein; 473 AA
                                                                                                                                                                                                                                                                                                                                                                                                                   894 EVTLFSKLFEGFKELQRDEENFLRELSKEEMDVLDGLKMEATEVEKLFGRALPIRKL 950
                                                                                                                                                                                                                                                                                                                                                                                                                                                             834 LQTAAQKVGRDFNTFIKTDNTCGPEPPLVERLEKKVEEGERTIIKEVEEIEEEVEKVRDK 893
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (766242). VDE nucleic acids (see also T66241, T66243), in sense or antisense orientation, can be used in genetic constructs to modify VDE levels in plants. Increased levels result in the plant being tolerant of increased light and therefore more productive and/or more resistant to disease. Underexpression of VDE increases photosynthetic efficiency under low light. The photosensitivity of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      301 HDNEYLLYQDDWYILSSKVENSPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLPESTIPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        714
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      181
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        594 VAIFILSVASKADAVDALKTCTCLLKECRLELAKCISNPACAANVACLQTCNNRPDETEC 653
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               534 RICCGLDSRGLQLFSHGKHNLSPAHSINQNVPKGNSGCKFPKDVALMVWEKWGQFAKTAI 593
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      474 MALAPHSNFLANHETIKYYYGSKLPGHKRFSWGWEDYFGSIVVAKICSSRRIPRYFRKSP 533
                                                                                                                                                                                                                                                                                                                                                              N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1 MALAPHSNELANHETIKYYVGSKLPGHKRESWGWEDYFGSIVVAKICSSRRIPRYFRKSP 60
                                                                                                                                                                                                                                                                                                                                                                                        EVTLESKLFEGEKELQRDEENFLRELSKEEMDVLDGLKMEATEVEKLFGRALPIRKL 477
                                                                                                                                                                                                                                                                                                                                                                                                                                               LQTAAQKVGRDFNTFIKTDNTCGPEPPLVERLEKKVEEGERTIIKEVEEIEEEVEKVRDK 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                HDNEYLLYODDWYILSSKVENSPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLPESIIPE 833
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RGLNPTFDAFDCQLHEFHTEENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYN 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RGLNPTFDAFDCQLHEFHTEENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYN 773
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                QIKCGDLFENSVVDEFNECAVSRKKCVPRKSDVGDFPVPDPSVLVQKFDMKDFSGKWFIT 713
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            VAIFILSVASKADAVDALKTCTCLLKECRLELAKCISNPACAANVACLQTCNNRPDETEC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RICCGLDSRGVQLFSHGKHNLSPAHSINQNVPKGNSGCKFPKDVALMVWEKWGQFAKTAI 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     QIKCGDLFENSVVDEFNECAVSRKKCVPRKSDVGDFPVPDPSVLVQKFDMKDFSGKWFIT 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   476;
                                                                                                                                                                                                                                 sativa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Similarity
                                                                                                                                                                                                                                             lettuce.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        478 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
/label=
275. .2
                                       /label=
                                                                  /label=
                                                                                                /label=
                                                                                                                                                                                                            Location/Qualifiers
                                                                                                                            'note=
                                                                                                                                                   /label= Mat_protein
                                                                                                                                                                                   /label=
                                                                                                                                                                                                                                             transgenic plant; zeaxanthin; antheraxanthin;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ficiency under low light. The photosensitivity of trees and ornamentals can be modified.
                                                                                                              .138
"Claim 8"
                          .272
                                                       .473
                                                                                  . 23
                                                                                                                                                                       .473
                                                                                                                                                                                                                              romaine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         34.1%;
       Tryptic_peptide-11
                                   Highly-charged_domain
                                                              Lipocalin_signature
                                                                                          Cys-rich_domain
                                                                                                                                                                             Transit_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 2554; DB 1; Length 478; Pred. No. 1.6e-193;
                                                                                                                                                                                                                                                           light; photosensitivity;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
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                                                                                                            В
                                                                                                                                                                                                                                 Matches 471;
                                                                                                                                                                       Query Match
Best Local Similarity
                                                                                                                                                                                                                                                     and antheraxanthin. This system, termed energy dependent non-radiative energy dissipation or non-photochemical fluorescence helping reduces the quantum efficiency of photosystem II (PSII) The amino acid sequence of the VDE was deduced from an isolated sense or antisense orientation, can be used in genetic constructs plant being tolerant of increased light and therefore more productive and/or more resistant to disease. Underexpression of VDE increases photosynthetic efficiency under low light. The
                                                                                                                                                                                                                              Sequence
           121 PRVDAVDALKTCACLLKECRIELAKCIANPSCAANVACLQTCNNRPDETECQIKCGDLFE 180
                                                                                                                                                                                                                                              photosensitivity of a range of crops, trees and
                                                                                                                                                                                                                                                                                                                                                                                                  DNA encoding plant violaxanthin de-epoxidase - used to modify the sensitivity of a plant to light Example 1; Fig 1; 41p; English.
The 55 kDa violaxanthin de-epoxidase (VDE) (W09874) of romaine lettuce catalyses the de-epoxidation of violaxanthin to zeaxanthin mathematical answer demandant
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      N-PSDB; T66241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Bugos RC, Rockholi
WPI; 97-281036/25
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06-AUG-1996; US-023502.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /note= "conserved Cys residue"
                                      61 TSSFSDSSHCKDKSQICSIDTSFEEIQRFDLKRGMTLILEKQWRQFIQLAIVLVCTFVIV
                                                               61 TSSFSDSSHCKDKSQICSIDTSFEETQREDLKRGMTLILEKOWRQFIQLAIVLVCTEVIV 120
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07-NOV-1996; U18291.
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                                                                                                                    MALSLHTVFLCKEEALNLYARSPCNERFHRSGQPPTNIIMMKIRSNNGYFNSFRLFTSYK 60
                                                                                          MALSLHTVFLCKEEALNLYARSPCNERFHRSGQPPTNIIMMKIRSNNGYFNSFRLETSYK 60
473 AA;
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Pred. No. 4.1e-189;
                                                                                                                                                      Mismatches
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misc_difference 127
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misc_difference 140
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Arabidopsis violaxanthin de-epoxidase.
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misc_difference 159
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misc_difference 150
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15-MAY-1997.
07-NOV-1996; U18291
                    WO9717447-A2.
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122
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120
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185
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362
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364...4
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W24790 standard; Protein; 1786

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w24790; 08-OCT-1997 (first entry) 08-OCT-1997 (first entry) p. falciparum liver stage antigen-3. p. falciparum liver stage antigen-3. plasmodium falciparum; pre-erythrocyte; liver stage antigen; serum; prophylaxis; Thai strain; gene organisation; exon; intron; hydropho glycosyl-phosphai(dylinostiol membrane anchoring sequence; antibody vaccine; immunotherapy; malaria.

sequence; antibody;

hydrophobic;

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DR N-PSDB; Tbb443.

PT DNA encoding plant violaxanthin de-epoxidase - used to modify the providing plant to light provided by the providing plant to light provided by the pro
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06-AUG-1996; US-023502.
(CALJ) CALGENE LNC.
Bugos RC, Rockicim DC,
WPI: 97-281035/25.
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N-PSDB; T66243.
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                         QDEENFVRELSSSEMEFLDEIKMEASEVEKLFGKALPIRKVR 1412
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SRKKCVPRKSD:GEEPAPDPSVLVQNFNISDFNGKWYITSGLNPTFDAFDCQLHEFHTEG
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QDEENFVRELSKEEMEFLDEIKMEASEVEKLFGKALPIRKVR
                                                                                                                                     TCGPBPALVERIEKTVEEGBRIIVKEVEEIEEEVEKEVEKVGRTEMTLFQRLAEGFNELK 1370
                                                                                                                                                                                                                  NKPEDYIFVYYRGRNDACDGYGGAVVYTRSSVLPNSIIPELEKAAKSIGRDFSTFIRTDN
                                                                                                                                                                                                                                                                        NKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELEKAAKSIGRDFSTFIRTDN 1310
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Pred. No. 9.9e-183;
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                                   732 TEENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLYQDDWYILSSK 791
                                                                                                                                                                                                                                                                                                                     1025
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Claim 1; Fig 2A-I; 69pp; French
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WPI; 97-065464/06.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       347 SIIPNLQK-AAKSVGRDEN-----NFITDNSCGPEPPLVE------RLEKTAEEG 390
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Plasmodium falciparum poly:peptide(s) and related nucleic acids - derived from the liver stage antigen-3, useful for malaria vaccine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  N-PSDB; T78868
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          13-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        27-DEC-1996; F00894
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Local
                                                                                                                                                                                                                                                                                                                                           RFSWGWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLFSHG----KHNLSPA 557
                                                                                                             VSRKKCVPRKSDVGD--FPVPDPSVLVQKFDMKDFSGKWFITRGLNPTFDAFDCQLHEFH 731
                                                                                                                                                                                           LLKECRLELAKCISNPACAANVACLQTCNNRPDETECQ---IKCGDLFENSVVDEFNECA 673
                                                                                                                                                                                                                                 EGVQETVTEHVEQNVYVDVDVPAMK----DQF-----LGILNEAGG------
                                                                                                                                                                                                                                                                 HSINQNVPKG-NSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADAVDALKTCTC 616
                                                                                                                                                                                                                                                                                                                                                                                                                                                           EK---KEVIDVIEEVKEEVATTLIETVEQAEEKSANTITEIFENLEENAVESNENVAENL 971
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TILENVEETTAESVTTFSNILEEIQENTITNDTI---EEKLEELHENVLSAALENTQSEE 914
                                                                                                                                                   -LKEMFFNLEDVFKS---ESDVITVEEIKDEPVQKEVEKETVSIIEEMEENIVDVLEE-- 1164
                                                                                                                                                                                                                                                                                                       ------MFRSIETSIVIQSEE--KVDLNENVVSSILDN--IENMKEGLLNKLENISST 1072
                                                                                                                                                                                                                                                                                                                                                                                 EKLNETVFNTVLDKVEETVEISGESLENNEMDKAF----FSEIFDNVKGIQENLLTG-- 1025
                                                                                                                                                                                                                                                                                                                                                                                                                     SKEEKEILNELQMEATEVEKLFGRALPIRKLRMALAPHSNFLANHETIKYYVGSKLPGHK 501
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EKLLIKEAVEIEEEVEKEV-----EKVRDTEMTLFQRLLEGFKELQQD-----EENFVREL 441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1786 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  falciparum
                                                                               -EKEDLTDKMIDAVEESIEISS-DSKEET
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FR-007007.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note=
279. .
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1537. .
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /note= "repeat region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2.0%;
18.1%;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    "repeat region
.1576
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        "repeat region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   155; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 147.5; DF Pred. No. 0.013;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     374;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels 409;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 1786;
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Purified mammalian protein mitosin and agents that bind it and inhibit its action - used to promote cell growth or to inhibit cell
                                              WPI; 95-170229,
N-PSDB; Q86851
                                                                                                                                                                                                                                                                                                                Cell cycle; M phase; mitosin; retinoblastome; mitosis; cell growth;
                                                                                  (TEXA ) UNIV TEXAS SYSTEM Lee W, Zhu X;
                                                                                                                                                                               W09511309-A2.
                                                                                                                                                                                                                region
                                                                                                                                                                                                                                                                                                                                                     R72826;
27-FEB-1996 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1678
                                                                                                                       22-OCT-1993;
                                                                                                                                    24-OCT-1994;
                                                                                                                                                                                                                                                                                                                                           Human mitosin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1398 VEKLF 1402
                                                                                                                                                                                                                                                  region
                                                                                                                                                                                                                                                                                                                                                                                             R72826 standard; Protein; 2482 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1173 NPTFDAFDCQLHEFHTEGDNKLVGNISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLYNHD 1232
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1113 CGDLFENSVVDEFNECAVSRKKCVPRKSDLGEFPAPDPSVLVQNFNISDFNGKWYITSGL 1172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1422 --LEEDDLEEVDDLKGSILDMLKGDMELGDMD-----KESLEDVTTKL------
                                                                                                                                                                                                                                                                                     Homo sapiens
                                                                                                                                                                                                                                                                                                          inhibition
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1584 KRIEKV-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1463
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    894 EV----TLFSKLFEGFKELQRDEENFLRELSKEEMDVLDGLKMEATEVEKLFGRAL----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 792 -VENSPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLPESI--IPELQTAAQKVGRDFNTF 848
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   KAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGERIIVKEVEE-----IEEEVE 1345
                                                               95-170229/22.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VVGFF 1682
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   KEVSKALESKNDVT-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              KEVEKV--GRTEMTLFQRLAEGFNELKQDEE-----NFVRELSKEEMEFLDEIKMEASE 1397
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NEYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ------IEEDKVEDIDEDIDEDIGEDKDEVID------LIVQKE 1583
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EPKDEIVEVEMKDEDIEED -------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FLIVPSADAVDALKTCACLLKGCRIELAKCIANPACAANVACLQTCN--NRPDETECQIK 1112
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PPIQSADLRTTGGRSSRPLSAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKLVGVLACA 1054
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SLEVEEEKKLEEVHELKEEVEHIISGDAH-----
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         IDAKD------DTLEKVIEEEHDITTTLDEVVELKDVEEDKIEKVSDLKDLEEDILK 1329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             IKTDNTCGPEPPLVERLEKKVEEGE--RTIIKEVEEI----EEEVEKVRD------K 893
                                                                                                                   U12162.
US-141239.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ---EEVKEEPXKKITKKK--
                                                                                                                                                                                                                /label= in+
                                                                                                                                                                                                                                              1480.
                                                                                                                                                                                        /label= internal_repeat
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                                                                                                                                                                                                                             internal_repeat
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -KAKKKKLEKKVEEGVSGLKKHVDEVMKYVQKIDKEVD
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PS Claim 4; Fig 8B; 6lpp; English.
CC R72829 is human mitosin. Mitosin is involved in the regulation of
CC R72829 is human mitotic cell cycle. Mitosin as with E2F-1 (see R72824)
CC interacts with the retinoblastoma protein (the retinoblastoma tumour
CC suppressor gene product). Mitosin is first synthesised at the G1/S
CC boundary, it is then phosphorylated from S through M phase, and during
CC mitosis, is closely associated with the centromeres/kinetochores at the
CC mitotic spindle poles. Mitosin is necessary for a eukaryotic cell to
CC enter the M phase of the mitotic cell cycle and its degradation is
CC useful for controlling cell growth as overexpression of mitosin prevents
CC a cell from exiting the M phase.
CC a anti-mitosin antibody, antibody fragment or a phosphorylated mitosin
CC useful for on nucleic acid encoding it) can also be used to inhibit cell
CC division which is particularly useful for the study of the cell cycle.
CC A further use is to control hyperproliferative cells, and so control
CC diseases such as psoriasis and breast cancer. It can also be used to
Dlock gametogenesis of an immature gamete.
                                                                                                                                                                                                                                                                                                                                                                                       Qy
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Best Local S
Matches 240
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929
                                                                                    698
                                                                                                                                                                         811 KAENLVLSTNLRNFQGDLVKEMQLGLEEGLVPSLSSSCVPDSSSLSSLGDSSFY--RALL
                                                                                                                                                                                                                  784
                                           874 RTIIKEVEEIEEEVEK---VRDKEVTLFSKLFEG-----FKELQRDEENFLRELSKE 922
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Local Similarity
nes 240; Conserv
                                                                                                                                                                                                                  --DWYILSSKVENSPEDYIFVYYKGRND-------AWDGYGGSVLYTRSAVL 826
                                                                                                                                                                                                                                                                                                                                                                                           ----PVPDPSVLVQKFDMKDFSGKWFITRGLNP-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VAC-LQTCNNRPDETE--CQIKCGDLFENSVVDEFNECAVSRKKCV--PRK--SDVGDF- 690
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         KSEAGGLKQEIMTLKEEQNKMQKEVNDLLQENEQLMKVMKTKHECQNLESEPIR-----
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EREKSISELSDQYKQEKLILLQRCEETGNAYEDLSQKYKAAQEKNSKLECLLNECTSLCE 433
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DEENFVRELS---KEEKEIL---------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LSETLSLEKKEMSSIISLNKREIEELTQENGTLKEINASLNQEKMNLIQK-SESFANYID 373
                                                                                                                                                                                                                                                                                                         QLHEFHTEENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLYQD--
                                                                                                                                                                                                                                                                                                                                                  NEVKILNDDSGLLHGELVEDIPGGEF---GEQPNEQHPVSLAPLDESNSYEHLTLSDKEV 768
                                                                                                                                                                                                                                                                                                                                                                                                                                       LOCSLOTIMNKLNELEKICEILQAEKYE--LVTELND---SRSECITATRKMAEEVGKLL 711
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           KEKECLQHELQTIRGDLETSNLQDMQSQEISGLKDCEIDAEEKYISGPHELSTSQNDNAH 656
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         KTCTCL----
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              HNLSPAHSINQNVPKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADAVDAL 611
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                KRFSWGWEDYFGSIVVAKICSSRRIPRYFRKSPRI------CCGLDSRGLQLFSHGK 551
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ---NELQMEATEVEKLFGRALP--IRKLRMALAPHSNFLANHETIKYYVGSKLPGH----
                                                                                                                                                                                                                                                             QMHFAELQEK - -
                                                                                    EQTGDMSLLSNLEGAVSANQCSVDEVFCSSLQEENLTRKETPSAPAKGVEELESLCEVYR
QSL----EKLEEKMESQGIMKNKEIQELEQLLSSERQELDCLRKQYLSENEQWQQKLTSV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2482 AA;
                                                                                                                                -SIIPELQTAAQ----KVGRDFNTFIKTDNTCGPEPPL----VERLEKKVEEGE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2.0%; Score 147; DB 1; Length 2482;
18.4%; Pred. No. 0.024;
ative 188; Mismatches 443; Indels 43
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -----ACAAN 637
                                                                                                                                                                                                                                                             ----FLSLQSEHKILHDQHCQ--MSSKMSELQTYVDSL 810
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels 434;
                                                                                                                                                                                                                                                                                                                                                                                                  -TFDAFDC
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985 TIEMESKLAAKKOTSOLSIELEVARIOLOGIDESSRSULGIDTSDATGGRNESCDISKE 961

OS Homo sapiens. Location/Qualifiers

FH Key Location/Qualifiers

FT Domain 258...280

FT Domain 340...362

FT Domain 187...1443

FT Domain 1885...1962

FT Domain 2146...2188

FT Domain 2146...2187

FT Misc_difference 2188

FT Misc_difference 2300

FT Misc_difference 2189

FT Misc_difference 2189

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FT Misc_difference 2301

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PS Claim 1; Column 40-52; 43pp; English.

CC This is the amino acid sequence for mitosin, a phosphoprotein

CC necessary for the cell to ente mitosis. The protein's degradation is

CC also necessary for the cell to advance into the next stages of mitosis.

CC The mitosin protein, can be used to control the growth of cells. An

CC anti-mitosin antibody, a mutant or a non-functional analogue of mitosin

CC can inhibit the mitotic cell cycle by preventing the cells from entering

CC the M phase, and over expression of mitosin or its functional

CC equivalent, would inhibit the cycle by preventing cells from leaving the

CC M phase. Antagonists to this protein can be used to control

CC hyperproliferative cells in, (e.g. thyroid hyperplasia, Grave's disease,

CC psoriasis, benign prostatic hypertrophy, Li-Fraumeni syndrome, breast

CC cancer, sarcomas and other neoplasms, bladder cancer, colon cancer,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local Similarity
Matches 240; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               lung cancer and various leukaemias and lymphomas). Reintroduction or supplementation of lost mitosin function by introduction of the protein or nucleic acid encoding the protein into a cell can restore defective chromosome segregation, which is a marker of progressing malignancy. Malignant proliferation of cells can then be halted. The protein can also be used for the detection and diagnosis of hyperproliferative
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24-OCT-1994; US-328254.
22-OCT-1993; US-141239.
(TEXA ) UNIV TEXAS SYSTEM.
          769
                                                                                                                                                                                                                                                     638 VAC-LQTCNNRPDETE--CQIKCGDLFENSVVDEFNECAVSRKKCV--PRK--SDVGDF-
                                                                                                                                                                                                                                                                                                                                                                                                           544 -----NSVKERESERNQ-CNFKPQMDLEVKEISLDSYNAQLVQLEAMLRNKELKLQESE 596
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           434
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products for therapy and diagnosis of hyper-proliferative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                WPI; 98-109817/10.
N-PSDB; V09076.
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Lee W, Zhu X;
                                             726 QLHEFHTEENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLYQD--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              374
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    379 LVERLEKTAEEGEKLLIKEAVEIEEEVE----KEVE-KVRDTEMTLFQRLLEGFKELQQ 432
                                                                                                                                                                                                   LQCSLQTTMNKLNELEKICEILQAEKYE--LVTELND---SRSECITATRKMAEEVGKLL 711
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NRKNELE----QLKEAFAKEHQEFLTKLAFAEERNQNLMLELETVQQALRSEMTDNQNNS 489
        QMHFAELQEK - - -
                                                                                                          NEVKILNDDSGLLHGELVEDIPGGEF-
                                                                                                                                                           ----PVPDPSVLVQKFDMKDFSGKWFITRGLNP-------
                                                                                                                                                                                                                                                                                                           KEKECLQHELQTIRGDLETSNLQDMQSQEISGLKDCEIDAEEKYISGPHELSTSQNDNAH
                                                                                                                                                                                                                                                                                                                                                                      KTCTCL-----
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              KRESWGWEDYFGSIVVAKICSSRRIPRYFRKSPRI------CCGLDSRGLQLFSHGK 551
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DEENFVRELS---KEEKEIL------
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              KSEAGGLKQEIMTLKEEQNKMQKEVNDLLQENEQLMKVMKTKHECQNLESEPIR-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ---NELQMEATEVEKLFGRALP--IRKLRMALAPHSNFLANHETIKYYVGSKLPGH----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EREKSISELSDQYKQEKLILLQRCEETGNAYEDLSQKYKAAQEKNSKLECLLNECTSLCE 433
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2482 AA;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2.0%; Score 147; DB 1; Length 2482; 18.4%; Pred. No. 0.024;
                                                                                                                                                                                                                                                                                                                                                           -----FLSLQSEHKILHDQHCQ--MSSKMSELQTYVDSL
                                                                                                  ---GEQPNEQHPVSLAPLDESNSYEHLTLSDKEV
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!	рь	Qy	Db .	QΨ	DЬ	Qy	Db	Qy	ф	Qy	В	Qy	Db	Qy	DЪ	QΥ	Db	QΥ	Dβ	Qy	Db	Qy	Дb	Qy	DЪ	Qy
	1428	1364	1368	1307	1311	1253	1259	1198	1213	1144	1200	1085	1161	1034	1101	1003	1045	961	985	923	929	874	869	827	811	784
	QLNKEKELLVKESESLQARLSESDYEKLNVSKALEAALVEK 1468	EGFNELKODEENFVRELSKEEMEFLDEIK-MEASEVEK 1400	HCIQVAEAEVKEXTELLQTLSSDVSELLKDKTHLQEKLQSLEKDSQALSLTKCELENQIA 1427		QKVIVCLEEELSVVTSERNQLRGELDTMSKKTTALDQLSEKKKEKTQELESHQSECL 1367	PEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELEKAAKSIGRDFSTFI 1306	DSWKERFLDVENELSRIRSEKASIEHEALYLEADLEVVQTEKLCLEKDNENK 1310	ISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLYNHDNEYLHYQDDWYILSSKIENK 1252	KLEYFSCDHQELLQRVETSEGLNSDLEMHADKSSREDIGDNVAKVN 1258	EFPAPDPSVLVQNFNISDFNGKWYITSGLNPTFDAFDCQLHEFHTEGDNKLVGN 1197	VKKENSDLSE 1212	IANPACAANVACLQTCNNRPDETECQIKCGDLFENSVVDEFNECAVSRKKCVPRKSDLG- 1144	RDRKVESLLNEMKELDSKLHLQEVQLMTKIEACIELEKI 1199	NELKELTAPLILKLVGVLACAFLIVPSADAVDALKTCACLLKGCRIELAKC 1084	PPGEDKTOGSSECISELSFSGPNALVPMDFLGNQEDIHNLQLRVKETSNENLRLLHVIED 1160	RTTGGRSSRPLSAFRSGFSKGIFDIVPLPSK 1034	HTSETTERTPKHD-VHQICDKDAQQDLNLDIEKITETGALKPTGECSGEQSPDTNYE 1100	PCHDRIRFFSSDDGIGRLGITRKRINGTFLLKILPPIQSADL1003	TLEMESKLAAEKKOTEQLSLELEVARLQLOGLDLSSRSLLGIDTEDAIQGRNESCDISKE 1044	EMDVLDGLKMEATEVEKLF	QSLEKLEEKMESQGIMKNKEIQELEQLISSERQELDCLRKQYLSENEQWQQKLTSV 984	RTIIKEVEEIEEEVEKVRDKEVTLFSKLFEGFKELQRDEENFLRELSKE 922	EQTGDMSLLSNLEGAVSANQCSVDEVFCSSLQEENLTRKETPSAPAKGVEELESLCEVYR 920	PESIIPELQTAAQKVGRDFNTFIKTDNTCGPEPPLVERLEKKVEEGE 87	KAENLVLSTNLRNFQGDLVKEMQLGLEEGLVPSLSSSCVPDSSSLSSLGDSSFYRALL 868	DWYILSSKVENSPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVL 826
			7	J	7	9	0	2	8	7	12	4	9	34	50	34	00	3	4	_	4	2	œ	ω	œ	9

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W71295
Novel human immunomodulatory poly:peptide(s) - yeast RAD50 or Drosophila Septin-2 proteins Disclosure; Pages 136-140; 155pp; English.
                                                                                               03-SEP-1998.
27-FEB-1997; U03159.
27-FEB-1997; WO-U03159
                                                         Dolganov G;
WPI; 98-481207/41.
                                             N-PSDB; V59979
                                                                                                                                             W09838306-A1.
                                                                                                                                                            Homo sapiens.
                                                                                                                                                                   Human homologue of yeast RAD50.

Human homologue; yeast RAD50; Drosophila Septin-2; Acyl-CoA synthetase; immunomodulatory activity; identification; activated T-cell.
                                                                                                                                                                                                              25-NOV-1998 (first entry)
                                                                                                                                                                                                                               W71295 standard; Protein; 1312 AA. W71295;
                                                                                     (GENE-) GENELABS TECHNOLOGIES
                             have homology to the
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PREDE
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 The present sequence represents a human homologue of the yeast S. cerevisiae gene RAD50. The present sequence has 35% overall homology to the yeast RAD50 gene, and is expressed in activated recells restia. Foetal liver and heart tissues. The specification also describes sequences encoding human homologues of the proteins than the Drosophila Septin-2 and Acyl-CoA synthetase. The proteins have immunomodulatory activity. The nucleic acids and proteins can be used to identify activated T-cells in a sample population. They can also be used to isolate and identify sequences population.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               encoding other proteins or other compounds having immunomodulatory
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          398 KLVRERQEGEAKTANQLMNDFAEKETLKQKQIDEIRD-KKTGLGRIIELKSEI----- 450
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   382 RLEKTAEEGE----KLLIKEAVEIEEEVEKEVEKVRDTEMTLFQRLLEGFKELQQDEENF 437
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            492 YVGSKLPGHKRFSWGWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGK 551
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     612 KTCTCLLKECRLELAKCISNPACAANVACLQTCNNRPDETECQIK------CGDLFE 662
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                                                         Human; RAD50; DNA repair; tumour suppression; cancer; Septin-2;
                                                                                                w22775;
21-DEC-1998 (first entry)
Homo sapiens.
W09727284-A2.
                                    central nervous system
                                                                                Human RAD50
                                                                                                                                             W22775 standard; Protein; 1312 AA
                                                                                                                                                                                                                                                                                                                                         815 KLQGIDLDRTVQQVNQEKQEKQHKLDTVSSKIELNRKLIQDQQEQIQHLKSTTNELKSEK 874
                                                                                                                                                                                                                                                                                                                                                                                  880 -----VEEIEEEVEKVRDKEVTLFSKLFEGFKELQRDEENF-----LRELSKEE 923
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     840 KVGRDFNTFIKTD-------NTCGPEPPLVERLEKKVEEGERTIIKE--
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                                                                                                                                                                                                                                                       875 LQISTNLQRRQQLEEQTVELSTEVQSLY 902
                                                                                                                                                                                                                                                                                                  924 MDVLDGLKME-----ATEVEKLF 941
                                                                                                                                                                                                                                                                                                                                                                                                                              756 NVNRDIOR-LKNDIEEQETLLGTIMPEEESAKVCLTDVTIMERFQMELKDVERKIAQQAA 814
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FITQL----TDENQSCCPVCQRV-----FQTEAELQEVISD---
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DDWYILSSKVENSPEDYIFV--YYKGRNDAWDGYGGSVLYTRSAV-LPESIIPELQTAAQ 839
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24-JAN-1997; U01299.
17-JUL-1996; US-687080.
26-JAN-1996; US-592126.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            anaemia with excess blasts. Also disclosed in this invention is Human septin-2 homologues of which may be used as targets for cancer therapies and central nervous system directed treatment methods, and to measure the proliferative potential of selected cell types.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Claim 5; Page 82-86; 195pp; English.
The human RAD50 (hRAD50) is involved in DNA repair and has tumour suppression activity, can be used to detect predisposition to, decrease the risk of or treat cancers, e.g. acute myeloid leukaemia, myelodysplastic syndrome, therapy related myelodysplastic syndrome, therapy related myelodysplastic syndrome therapy related acute myeloid leukaemia, refractory anaemia or refractory therapy related acute myeloid leukaemia, refractory anaemia or refractory
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    503
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             492 YVGSKLPGHKRFSWGWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGK 551
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  438 VRELSKEEKFILNELQMEATEVEKLFGRALPIRKLRMALAPHSNFL-----ANHETIKY 491
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            398 KLVRERQEGEAKTANOLMNDFAEKETLKOKQIDEIRD-KKTGLGRIIELKSEI------ 450
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       382 RLEKTABEGE----KLLIKEAVEIEEEVEKEVEKVRDTEMTLFQRLLEGFKELQQDEENF 437
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                612 KTCTCLLKECKLELAKCISNPACAANVACLQTCNNRPDETECQIK-------CGDLFE 662
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          531 -----HTTTR:OMEMLTKDKADKDEQIRKIKSRHSDELTSLLGYF----PNKKQLEDWL
                                                                                                                                                                                                                                                                                                                                                      669 FITQL----TDENOSCCPVCORV-----FQTEAELQEVISD------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      663 NSVVDEFNECAVSRKKCVPRKSDVGDFPVPDPSVLVQKFDMKDFSGKWFITRGLNPTFDA 722
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   581 HSKSKEINQTRDRLAKL--NKELASSEQNKNHINNELKRKEEQLSSYEDKLFDVCGSQDF
                                                                                  815 KLQGIDLDRTV>CVNQEKQEKQHKLDTVSSKIELNRKLIQDQQEQIQHLKSTINELKSEK
                                                                                                                                                                          756 NVNRDIQR-LKWDIEEQETLLGTIMPEEESAKVCLTDVTIMERFQMELKDVERKIAQQAA 814
                                                                                                                                                                                                                       840 KVGRDFNTFIKTD-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Local Similarity
875 LQISTNLQRRQCLEEQTVELSTEVQSLY 902
                                     924 MDVLDGLKME------ATEVEKLF 941
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           97-393672/35.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       HNLSPAHSINONVPKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADAVDAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EVIS-LQNEK-----LDQEMEQL-NH-- 531
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ---LSKKQ----NELKNVKYELQQLEGSSDRILELDQELIKAERELSKAEKNSNVETLKM 502
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1.8%; Score 135.5; DB 1; sal Similarity 19.7%; Pred. No. 0.073; 124; Conservative 95; Mismatches 218;
                                                                                                                                                                                                                                                                                                                                                                                                 FDCQLHEFHTEENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLYQ 782
                                                                                                                                                                                                                                                                 ----LQSKLRLAPDKLKSTESELKKKEKRRDEMLGLVPMRQSIIDLKEKEIPELRNKLQ 755
                                                                                                                                                                                                                                                                                                            DDWYILSSKVENSPEDYIFV--YYKGRNDAWDGYGGSVLYTRSAV-LPESIIPELQTAAQ 839
                                                                                                                                                                                                                                                                                                                                                                                                                                                ESDLDRLKE-------
                                                                                                                               -----VEEIEEEVEKVRDKEVTLFSKLFEGFKELQRDEENF-----LRELSKEE
                                                                                                                                                                                                                         -----NTCGPEPPLVERLEKKVEEGERTIIKE-- 880
                                                                                                                                                                                                                                                                                                                                                                                                                                                   -----EIEKSSKQRAMLAGATAVYSQ 668
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 1312;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels 191;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        611
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ωy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PT Determining effect on signalling pathways in live cells from PT petermining effect on signalling pathways in live cells from PT fluorescent protein with a signalling component, and new apparatus, PT particularly for identifying toxins and potential therapeutic agents PT particularly for identifying toxins and potential therapeutic agents CC The present sequence represents a human p85alpha-green flourescent CC protein fusion product. The fusion protein is used in an assay CC quantitative information about the influence of a molecule on a cellular CC quantitative information about the variation, caused by the molecule, CC emistion is processed to provide information that correlates spatially distributed light CC emission is processed to provide information that correlates spatial CC identify agents that (in)directly affect intracellular signalling, and the information that correlates spatial CC identify agents that (in)directly affect intracellular signalling, and the information that correlates spatial correlated to screen for potential therapeutic agents or toxins, and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
                   1058 ------
                                                                             1010 SRPLSAFRSGFSKGIFDI----VPLPSKNEL---KELTAPLLLKLVGV-----LACAFLI 1057
                                    336 PRPLPV-APGSSKTEADVEQQALTLPDLAEQFAPPDIAPPLLIKLVEAIEKKGLECSTLY 394
                                                                                                                       284 LG-FSDGQEARPEEIGWLNGYNETTGERGDFPGTYVEYIGRKKISPP-----TPKPRP
                                                                                                                                                           955 THCFTSPCHDRIRFFSSDDGIGRLGITRKRINGTFL----LKILPPIQSADLRTTGGRS 1009
                                                                                                                                                                                                                                       898 FSKLFEGFKELORDEENFLRELSKEEMD----VLDGLKMEATEVEKLFGRALPIRKLMAVA 954
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence
                                                                                                                                                                                                                                                                                                                                                                 150 NVYIMADKQKNG----IKVNFKIRHNIED---GSVQLADHYQQNTPIGDGPVLLPD---- 199
                                                                                                                                                                                                                                                                                                                                                                                                     784 DWYILSSKVENSPEDYIFVYYKGRNDAWDGYGGSVL----YTRSAVLPES--IIPELQTA 837
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      736 KLVGNLSWRIRTPDGGFFTRSAVQKFVQDP------KYPGILYNHDNEYLLYQD 783
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Kasper A, Petersen Bjorn S, Scudder K, Thastrup
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          07-APR-1998; DK0145
07-APR-1997; DK-000392
(NOVO ) NOVO-NORDISK AS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   N-PSDB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Chimeric - Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             08-FEB-1999 (first entry)
p85alpha-oreen flourescent protein fusion product.
Human; p85alpha gene; fusion protein; green fluorescent protein; GFP;
intracellular signalling; chimera.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             52 GKLPVPWPTLVTTLTYGVQCFSRYPDHMKQ-------HDFFKSAMPEGYVQER 97
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              W85011;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  W85011 standard; Protein; 968 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Local
                                                                                                                                                                                                                                                                                   -----NHYLSTQSALSKDPN-----EKRDHMVL-----LEFVTAAGITL 232
                                                                                                                                                                                                                                                                                                                                                                                                                                               TI-----FFKDDGNYKTRAEV-KFEGDTLVNRIELKGIDFKEDGNILGHKLEYNYNSH 149
                                                                                                                                                                                                                                                                                                                       AQKVGRDENTEIKTDNTCGPEPPLVERLEKKVEEGERTIIKEVEEIEBEVEKVRDKEVTL 897
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GDFPVPDPSVL-----VQKED-----MKDFSGKWFITRGLNPTFDAFDCQLHEFHTEEN 735
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            180;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  98-594491/50.
                                                                                                                                                                                                ----GMDELYK---SGLRSMSAEGYQYRALYDYKKEREEDIDLHLGDILTVNKGSLVA 283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 V71026
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               968 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Conservative 111;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            new drug targets.
-----VPSAD-----AVDALKTCACLLKGCRIE------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             19.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 135; DB 1; Length 968; Pred. No. 0.05;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Mismatches 298;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels 318;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
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RESULT 10
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             reducing their AT content

Example 1; Fig 3c; 48pp; German.

This sequence represents a modified plasmodium falciparum gp190/MSP-1 (merozolte surface) protein. The gene encoding this protein has been protein is useful in vaccines against malaria or for producing monoclonal protein is useful in vaccines against malaria or for producing monoclonal antibodies (for passive immunisation). The complete gp190 protein can now the native pattern of folding. Larger amounts of the protein can be produced recombinantly than would be possible using the parasites as
    Sequence
                                                                                                                                                                                                                            N-PSDB; V21451, V35363.

Recombinant production of complete gp190/MSP-1 Plasmodium surface protein - useful in anti-malaria vaccines, also stabilising genes
                                                                                                                                                                                                                                                                                                                         02-OCT-1997; E05441.
02-OCT-1996; DE-040817.
(BUJA/) BUJARD H:
Bujard H, Pan W, Tolle
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            P. falciparum synthetic 9p190 protein.
9p190; malaria; MSP-1; merozoite surface protein; stability; vaccine;
monoclonal antibody; passive immunisation; parasite.
                                                                                                                                                                                                                                                                                                                                                                                                                 09-APR-1998.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Plasmodium falciparum.
                                                                                                                                                                                                                                                                                                                                                                                                                                  WO9814583-A2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          W54145 standard; Protein; 1639 AA.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1350 KVGRTEMTLFQRLAEGFNELKQDEENFVRELSKEEMEFLDEIKMEASEVEKLFGKALP-- 1408
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       23-SEP-1998 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1298 IGRDFSTFIRTDNTCGPEPALVERIEKTV------EEGERIIVKEVEEIEEE-VEKEVE 1349
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1241 DWYILSSKIE---NKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELEKAAKS 1297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1193 KLVGNISWRIKTLDS--GF---FTRSAVQKFVQD-PNQPGVLYNH--DNEYLH----YQD 1240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           815 IQLRKTR 821
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1155 ---QNFNISDENGKWY-----ITSGLNPTFDA-----FDCQLHEFHT-----EGDN 1192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       623 KLI-----KIFHRDGKYGFSDPLTFSSVVELINHYRNESLAQYNPKLDVKLLYPVSKYQQ 677
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      563 NNGMNNNMSLQNAEWYWGDISREEVNEKLRDTADGTFLVRDASTKMHGDYTLTLRKGGNN 622
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          515 MLFRFSAASSDNTENLIK---VIETLISTEWNERQPA--PALPPK------PPKPTTVA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         395 RTQSSSNLAELRQLLDCDTPSVDLEMIDVHVLADAFKRYLLDLPNPVIPAAVYSEMISLA 454
                                                                                                                                                                                                                                                                                                         98-240088/21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RI----MHNYDKLKGRISEIIDSRRRLEEDLKKQAAEY-----REIDKRMNSIKPDL 814
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      YDRLYEEYTRTSQEIQMKRTAIEAFNETIKIFEEQCQTQERYSKEYIEKFKREGNEKEIQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DQVVKEDNIEAVGKKLHEY-------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -----PDETECQIKCGDLFENSVVDEFNECAVSRKKCVPRKSDLGEFPAPDPSVLV 1154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PEVQSSEEYIQLLKKLIRSPSIPHQYWLTLQYLLKHFFKLSQTSSKNLLNARVLSEIFSP 514
1639 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ------LAKCIANPAC-------AANVACLQTCNNR-----
                                                                                                                                                                                                                                                                                                                           Tolle R;
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Matches Query Match

Y Match 1.8%; Score 134; DB 18.0%; Pred. No. 0.14;

Conservative

207;

Mismatches

473;

Indels 444; Gaps

70;

DB 1; Length 1639;

			 a b	D 10	ρ 8	7d 68	ط ر	δδ qq	Qy Y	P 09	Qy Db	₽ 5	}	Db dd	Qy	Db 09	dg VQ	Qу	QУ
1107 TECQIKCGDLF	QY 1049 GVLACAFLIVPSADAVDALKTCACLIKGUVK-IELAROUTENIK	KHVLQNFSVFE	Qy 884EEEVEKVRDKEVTLESKLESKE	OY -840 KVGRDENTEIKTONTCGPEP-PLVEKLERNY :	MVCNI	SHST	757 TPPAPVN	706 EGEITGQATTKPGQQAGSALEG TEGUNPTFDAFDCQLHEFHTEENKLVG	652	625	572 596 KITKDE	559	: : : : :	450 IKIEKKKIALPIRKLRMAL	405 V	350 PNLQKAAKSVGRDENNEITTDNSCGPEPPLVERLEKIALGERULL	296 FLHYQDDWYILSSQIENKPDDY 296 FLHYQDDWYILSSQIENKPDDY 347 IEEHEKEIKEIAKTIKFNIDSLFTDPLE	244 QLHEFHMENDKLVGNLIWRIKTLDGGFFTKSAVQIF - VAUG 	184 VDQFNECAVSRKKCVPRKSDVGEFPVPDRNAVVQNFN

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7.0
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1167 YITSGLNPTFDAFDCQLHEFHTEGDNKLVGNISWRIKTLDSGFFTRSAVQKFVQD----- 1222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1167 ---TGNSPS-----ENNTDVNNALE---SYK-KELPEGTDVATVVSESGSDTLEQS 1210
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches 139;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1280 SSVLPNSIIPELEKAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGERIIVKEVEE 1339
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1211 QPKKPA-----STHYGAESNTITTSQNVDDEVDDVIIVPIFGESEEDYDDLGQVV--TG 1262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1222 - PNOPGVLYNHUNEYLHYODDWYILSSKIENKPEDYIFVYYRGRNDA-WDGYGGAVVYTR 1279
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1292 VYRSLKKOLE---NNVMTENVNVKDILNSRENKRENFKNVLESDLIPYKD 1338
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1340 IEEEVEKEVEKVGRTEMTLFQRLAEGFNELKQDEENFVRELSKEEMEFLD 1389
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     03-APR-1995 (first entry)

103-APR-1995 (first entry)

104-APR-1995 (first entry)

105-APR-1995 (first entry)

105
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12-FEB-1993; US-021601.
25-JUN-1993; US-082849.
(USSH ) US DEPT FEALTH & HUMAN SERVICES.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Bacillus anthracis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    The sequence encoding the lethal factor of Bacillus anthracis may be used in the construction of a nucleic acid which encodes a fusion protein comprising the anthrax protective antigen binding domain of the native anthrax lethal factor and a sequence encoding an activity inducing domain of a second protein. The fusion proteins are useful for the specific killing of tumour cells or the killing of cells infected with incracellular pathogens, especially HIV.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          N-PSDB; Q70179.
Nucleic acid encyding anthrax toxin fusion protein - useful for turgetting toxin to specific cells, eg for killing tumour cells
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Arora N, Klimpel K, Leppla SH, Nichols PJ, Singh Y; WPI; 94-279753/3*.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            or HIV-infected cells
Disclosure; Page 75-77; 124pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                     733 EENKLVGNLSWEIRTPDGGFFTRSAVQKFVQDPKYPGTLYNHD---NEYLLYQDDWY--I 787
                                                                                                                                                                                                                                                 129 L---VIOSSEIV VENTEKALN-------VYYEIGKILSRDILSKINOPYÖKFLDVLNT 176
                                                                                                                                                                                                                                                                                                              788 LSSKVENSPEDY TEVYYKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDFNT 847
                                                                                                                                                                                    177 IKNASDSDGQPLLFTNOLKEHPTDFSVEFLEONSNEVQEVFAKAFAYYIEPQHRDVLQLY 236
237 APEAFNYMDKFNEQEINLSLEELKDORMLSRYEKWEKTKOHYQHWSDSLSEEGRGLLKKL 296
                                                                                                                                                                                                                                                                                                                                                                           72 EMYKAIGG---KIYIVDGDITKHISLEALSEDKKKIKDIYGKDALLHEHYVYAKEGYEPV 128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative 117; Mismatches 254; Indels 300; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1.8%; Score 132; DB 1; Length 776; 17.2%; Pred. No. 0.061;
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31;

PT Ce PS Cll CC The CC moor CC moor CC ce the CC the	PR PA PI DR DR	DD NA	RES YO1 ID AC	Db Q	Db	Qy	da Vo	Дb	Qy	Db 2	yg da	Qy	D	m 04					
ntromere-variant aim 5; Page aim 5; Page e present s Xenopus. T tor activit tor activit be been toward achromosome. Il proliferarapeutic, I	- EEP-1999; - EEP-1997; - EGC) UNIV C EVEL DW, EVEL DW, 1; 99-229233 PSDB; X26819	Amino acid sequence of centromere-associated protein-E (CENP-E). Plus end-directed microtubule motor activity; chromosome movement; altrotubule binding activity; chromosome movement; mitosis; inflammatory disease; inmune disease; vascular malfunction; restenosis; fungal infection; selective herbicide; hypertension; insecticide; plant growth regulator; activator; cancer cell marker. W09913061-A1.	12 701632 s		637 PNIAEQYTHQ	1338EEIEEEVEKEVEKVGRTEMTI DOBI A DOBINIO	1281 SVLPNSIIPELEKAAKSIGRDFSTFIRTDNTCGPEPA	534IIKQSEKEYIRI-DAKVVEKSKIDTKIQEAQLNINQEWNAIGTBEVEVET	1223 NQPGVLYNHDNEYLHYQDDWYILSSKIENKBEDVI	511 AGYLENG	459DNTKINRGIENEFKKNEKYSISSNYMIVDIN	1110 QIKCGDLFENSVVDEFNECAVSRKKCVPRKSDLGEFPARDDENTVONTONTONTONTONTONTONTONTONTONTONTONTONTO	451GADLVDST	NIDALLHQSIGSTLYNKIYLYE	1007 GRSSRPLSAFRSGFSKGIFDIVPLPSKNELKELTABULLETVC 100	NRIQVDSSNPLSRXFXEBTYRTFT	51 MAVATHCETSPCHDRIREFSSDDGTGB1GTTBBCTTTCT	297 OIDIEPKKDDITHGESOREPETT	

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	w0000000
Db 450 Qy 20 Db 450 Qy 380 Qy 380 Qy 380 Qy 380 Qy 421 Db 570 Qy 449 Db 692 Ph 561 Ph 776 Ph 779 Ph 661 Ph 779 Ph 677 Ph 682 Ph 683 Ph 683 Ph 683 Ph 684 Ph 684 Ph 685 Ph 685 Ph 685 Ph 685 Ph 685 Ph 686 Ph 686 Ph 686 Ph 686 Ph 686 Ph 686 Ph 687 Ph 688 Ph 688	of unwanted cell proliferation (typical of metastases; vascular malfunction; inflamma angiogenesis; hypertension; restenosis; and insecticides) and plant selective herbicity yields. CENP-E is also a diagnostic marker cancer cells. Sequence 2954 AA;

1116 -TPLSDSLPPSKLVEGNSQDPIEII 1025 FDI-VPLPS	Фр	K M O	# 8 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	DR PT PT	PF PR PR PA PA	PN OS	RESU P507 ID AC	Qy Db	ОУ	Дb	Qy	Фр	Qу	Qy Db	Qy
GVLACAFLIVPSA 1061GVLACAFLIVPSA 1061	84 VDQENECAVSRKKOVPRKSDVGEFPVPDRNAVVQNENNKDESGKWYITSGLNPTEDAFDC 24 :: : : : : : : : : : : : : : : : :	atch 1.7%; Score 129; DB 1; Length 1654; cal Similarity 17.5%; Pred. No. 0.34; 238; Conservative 214; Mismatches 499; Indels 408; Gaps 67	Fig 1; 51pp; English. Hence encoding the P195 protein of Plasmodium falcipar ence encoding the P195 protein of Plasmodium falcipar and a peptide comprising at least one of its epitopes of the protein of the protein for inducive to malaria comprising the novel peptide or P195 or a comprising at least one epitope when derived from the ence, together with a carrier.	87. ence encoding plasmodium falciparum protein - essing the protein for use in vaccines agains	301173. GB-004692. GB-024340. GB-004429. idhu J, Odink K, Lockyer M, Riveros-Moreno	(1115t enrly) he P195 protein of Plasmodium falcipa ne; epitope; antigen; immunogen. lciparum.	LT 13 77 P50777 standard; Protein; 1654 P50777;	339 EIEEEVEKEVEKVGRIEMTLFORLAEGFNELKODEENFVRELSKEEME 138 	PELEKAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGERIIVKEVE 1	HDNEYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSII	180 DCQLHEFHTEGDNKLVGNISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLXN 1	20 SVVDEFNECAVSRKKCVPRKSDLGEFPAPDPSVLVQNFNISDFNGKWYITSGLNPTFDAF 1 :: :: :	DAVDALKTCACILKGCRIELAKCIANPACAANVACLQTCNNRPDETECQTKCGDLFEN	EDI-VPLPSKNELKELTAPLLLKLVGVLACAFLIVPSA	987 GTFLLKILPPIQSADLRTTGGRSSRPLSAFRSGFSKGI 1

123	74 PTFDAFDCQLHEFHTEGDNKLVGNISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLYNH	11	Q Q
119		11	dd
117	EFNECAVSRKKCVPRKSDLGEFP	11	Qу
	TEDNYASLENFKVLSKL	10	ďΩ
112	TCACLLKGCR ·-	10	QУ
109	51	106	ДD
106	.1 RPLSAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKLVGVLACAFLIVPSADAVDAL	1011	Qy
106	.5 LQLSEDLYNKYKEKLERLEDKKKTVGKYKMQIKKLTLLKEQLESKLNSLN	1015	Дb
1010	AVATHCFTSFCHDRIRFFSSDDGIGRLGITRKRINGTF	9.	Qy
101	0 LKDSDTFYNESTTNFVKSKADDINSLNDESKRKKLE-EDINKLKKT	97	Dβ
950	LRELSKEEMDVLDGI	8	Qy
969	10 PLSLTPQDKPEYSANDDTSHSTNLNNSLKLFENILSLGKNKNIYQELIGQKSSENFYEKI	91	Дb
890		859	Qy
909	IGYVFILLME	858	Db
858	NDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDF	808	Qy
858	ITKEEESKLSSCDPLDLLENIQNNIPVMYSMFDSLNIVYHNYLWV	809	Db
807	DGGFFTRSAVQKTVQ-DFKYPGILYNHDNEYLLYQD	749	Qy
809	7 TPPAPVNNKTENVSKLDYLEKLYQFLNTSYICHKYILVSHSTMNEKILKQYK	757	Db
748	KFDMKDFSGKWFI	700	Qy
756	6 EGEITGQATTKPGQQAGSALEGDSVQAQAQEQKQAQPPVPVPVPEAKAQVP	706	da
700	ECQIKCGDLFENSVVDEFNECAVSRKKCVPRKSDVG	652	Qy
705	5 NIHVPNSYKQENKQEPYYLIVLKKEIDKLKVFMPKVESLINEEKKNIKTQGQSDNSEPST	646	Db
651	5NVACLQTCNNRPDET	625	Qy
645	5 KITKDENKPDEKILEVSDIVKVQVQKVLLMNKIDELKKTQLILKNVELKH	596	Дb
625	KFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADAVDALKTCTCLLKECRLE-	572	Qy
595	VVEKELKYYKNLISKIENEIETLVENIKKDEEQLFEK	559	Дb
572	VVAKICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGKHNLSPAHSINQNVPKGNSGC	515	Qy
558	NFEKMMGKRYSIKVEKLTHPNTFASYENGKHNL-EKLTKALKYMEDYSLRNI	508	Дb
514	EVEKLEGRALPIRKLRMALAPHSNELANHETIKYYVGSKLPGHKRESWGWEDY-FGSI	458	Qy
507	IKIEKKKIESDKKSYEDRSKSLNDITKEYEKLLNEIYDSKENNNIDLT	460	Db
457	VEKEVEKVRDTEMTLFQRLLEGFKELQQDEENFVRELSKEEKEILNELQMEAT	405	Qy
459	PNGVTYPLSY-NDINNALNELNSFGDLINPFDYTKEPSKNIYTDNERKKFINEIKEK	404	Dβ
404	PNLQKAAKSVGRDFNNFITTDNSCGPEPPLVERLEKTAEEGEKLLIKEAVEIEEE	350	QY
403	IEEHEKEIKEIRKTIKFNIDSLFTDPLELEYYLREKNKNIDISAKVETKESTEPNE-Y	347	Db
349	YGGSVIYTRSPTLPESII	296	Ωу
346	EIKNPPPANSGNTPNTLLDKNKK	291	Db
295	LDGGFFTRSAVQTFVQDPDLPGALYNHDNE	244	Qy

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R95268
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                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    The gene cluster nisABTCIPRK (see T29660 and T29661) of Lactococcus lactis includes the nisA gene coding for pre-nisin A (R95267, see immunity. nisB (R95268) and nisC (R95207) are believed to be involved in reactions that modify pre-nisin; nisT (R95269) is similar to a transport ATPase and is involved in translocation of nisin. Replacement of the natural, chromosomal copy of the nisA a variants in Lactococcus lactis hosts.

Sequence 993 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Making cell which expresses nisin but does not contain natural nisa gene by providing cell with variant nisa gene, and genes for nising
      392 R-----EKYLSMYVEA
                                497 LPGHKRFSWGWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGKHNLSP 556
                                                                                                                          437
                                                                                                                                                                                    405 VEKE-----------VEKVRDTEMTL---FQRLLEGFKE-------LQQDEEN 436
                                                                      342 FIEKYGVDQEVQITEL-----FDSTFGIGAPYNYNH----PRNDFYESEPSTLYYSEEE 391
                                                                                                                                              282 IYQEMSQILENDNYIQIDLISDSEINFDVKQKQQLEHLAEFLGNTTKSVRRTYLDDYKDK 341
                                                                                                                                                                                                                           225 SNLQKDLLS---DFSWNTFLTKVEAIDEDKKYIIPLKKVQKFIQEYSEIEIGEGIEKLKE 281
                                                                                                                                                                                                                                                             350 PNLQKAAKSVGRDF--NNFITTDNSCGPEPPLV---ERLEKTAEEGEKLLIKEAVEIEEE 404
                                                                                                                                                                                                                                                                                                 171 IKYTNYYQIISEFCENDYQKYEDICETYTLCYGDEYRELSEQYLGSLI-----VNHYLI 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Pre-nisin modification gene nisB product.
Nisin A; nisB gene; antimicrobial; preservative; antibiotic;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1316 -- NNVMTFNVNVKDILNSRFNKRENFKNVLESDLIPYKD 1352
                                                                                                                                                                                                                                                                                                                                       297 LHYQDDWYILSSQIENKPDDY-----IFVYYRGRNDAWDGYGGSVIYTRSPTLPESII 349
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                WPI;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              19-NOV-1994; GB-023404. (BIOT-) BIOTECHNOLOGY &
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WO9616180-A1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        lantibiotic; protein engineering. Lactococcus lactis strain NIZO R5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   01-AUG-1996 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1351 VGRTEMTLFQRLAEGFNELKQDEENFVRELSKEEMEFLD 1389
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1291 LEKAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGERIIVKEVEEIEEEVEKEVEK 1350
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1194 NALESY----KKELDEGTD------YATVVSESGSDTLEQSQ-----PKKPA----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       R95268 standard; Protein; 993 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1232 DNEYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDA-WDGYGGAVVYTRSSVLPNSIIPE 1290
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    20-NOV-1995; G02699
                                                                                                                                                                                                                                                                                                                                                                                                        Local Similarity
                                                                                                          FVRELSKEEKEILNELQMEATEVEKLFGRALPIRKLRMALAPHSNFLANHETIKYYVGSK 496
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          96-268616/27.
                                                                                                                                                                                                                                                                                                                                                                                            125;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              -STHVGAESNTITTSQNVDDEVDDVIIVLIFGESEEDYDDLGQVVT---GEAVTTSVI-- 1285
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         T29660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gasson MJ;
                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        -----DN-----ILSKIE---NEYEVLYLKPLAGVYRSLKKQLE-
                                                                                                                                                                                                                                                                                                                                                                               1.7%; Score 129; DB 1; Length 993; 18.8%; Pred. No. 0.15; itive 99; Mismatches 244; Indels 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            BIOLOGICAL SCI RES COUNC
                                                                                                                                                                                                                                                                                                                                                                               244; Indels 196;
-VKNHNVINLDD 413
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           genes for nisin
                                                                                                                                                                                                                                                                                                                                                                             Gaps
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                                                                                                                                                               Query Match
Best Local Similarity
Matches 109; Conserv
                                                                                                                                                                                                                                                               Sequence
                                                                                                                                                                                                                                                                                  in R77087.
                                                                                                                                                                                                                                                                                                          expression vectors containing the SV40 virus promoter and used to transfect COS cells. Expression of the receptor was low when SUR CDNA (T01551) was used, but high when the genomic SUR
                                                                                                                                                                                                                                                                                                                                                                 Sulphonyl:urea receptors and corresp. nucleic acids - used in detecting persistent hyperinsulinaemic hypoglycaemia of infancy Disclosure; Page 99-104; 145pp; English.
Rat sulphonylurea receptor (SUR) DNA was ligated into eukaryotic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (BAYU ) BAYLOR COLLEGE MEDICINE
(TEXA ) UNIV TEXAS SYSTEM.
Bryan LA, Cote GJ, Gagel RF,
            529
                                  926 VLDGLKMEA--TEVEKLFGRALPIRKLMAVATHCFTSPCHDRIRFFSSDD-----GIGRL 978
                                                                                                                                                                                                                                                                                                                                                                                                                                                         N-PSDB; T01568.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  sulphonylurea receptor; diabetes; COS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Rat sulphonylurea receptor. Persistent hyperinsulinaemic hypoglycaemia of infancy;
                                                                       480 KLSQAQRTTL-----EYSNERLKQT---NEMLRGIKLLKLYAWENIFCSRVEKTRRK 528
                                                                                                              868 KVEEGERTIIKEYEEIEEEVEKVRDKEVTLFSKLFEGFK--ELQRDEENFLRELSKEEMD 925
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     13-APR-1994; US-226972.
15-MAR-1995; US-404531.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               W09528411-A1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                R77087 standard; Protein; 1582 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          12-APR-1995; U04463
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               26-OCT-1995.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             31-JAN-1996 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    804 YKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDFNTFIKTDNTCGPEPPLVE 863
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      728 RREK 731
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       864 RLEK 867
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  684 FEDENIINKGEKGRV-----ADVVVPFIRTRA--LGNEGRAFIREKRVS-----VE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             624 NSKMTIRELIQSKEIPKEFYIVNGDNKVYLSQENPLDMEILESAIKKSSKRKDFIELQEY 683
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       566 NKTLFSNELRFLYEISLDDK--FGNLPWELIYRDFDYIPRLVFDEIVISPAKWKIWGRDV 623
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                717 NPTFDAFDCQ-LHEFHTEENKLVGNLSWRIRTPDGGFFTR-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       666 VDEFNECAVSRKKCVPRKSDVGDFPVPDPSVLV-----QKFDMKDFSG----KWFITRGL 716
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   610 ALKTCTCLLKECRLELAKCISNPACAAN----VACLQTCNNRPDETECQIKCGDLFENSV 665
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          414 LESHYQKM------DLEKKSELQGLELFLNLAKEYEKDIFILGDIYGNNNLGGASGRFS 466
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             557 AHSINONVPKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFIL-----SVASKADAVD
    EMTSLRAFAVYTSISIFMNTAIPIAAVLITFV----
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                                                                                                                                                                                                                                                                                    (T01568) was used; the product had the sequence given
                                                                                                                                                                                                                                                           1582 AA;
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                                                                                                                                                         1.7%; Score 124; DB
18.8%; Pred. No. 0.79;
ative 72; Mismatches
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Copyright (c) 1993 - 1998 Compugen Ltd.
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불그룹	NPTEDAFI EYLLYQDD EYLLYQDD EYLLYQDD AAQKVGRE 	CGDLFENSCHILL COLLEGE COLLEG	imilarit ; Conse ; Conse 	nthin de-epoxidase precursor coes: Nicotiana tabacum (common tob 24-Mar-1999 *sequence_revision 2 sion: T03750 R.C.; Hieber, A.D.; Yamamoto, H. Sion: T03750 sion: T03750 sion: T03750 sion: T03750 sion: T03750 inces: 1-478 cBUC- irreferences: EMBL:U34817; NID:gl/ imental source: strain Xanthi: timental source: strain Xanthi: timption: violaxenthin de-epoxidas: obtecting the piotosynthetic appa. established as member of the li Commain: trans:t peptide #status 178/Product: violaxanthin de-epox		7.7.7.7 7.7.7.7
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	TEE (VEN	HNL:	.1%;).0% YVGS	_revi _revi Yamar 244, zymed ated ated ated ated ated ated ated at		22222
SKLEEGSKELQRDEENFLRELJSKEEMDVLDGLKMEATE SKLEEGFKELQRDEENFLRELSKEEMDVLDGLKMEATE	RGLNPTFDAFF::QLHEFHTEENKLVGNLSWRIRTPDGGFFTRSAVGKFVQUFKIRGLNPTFDAFF::QLHEFHTEENKLVGNLSWRIRTPDGGFFTRSAVLF HDNBYLLYQDDWYILSSKVENSPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLF HDNBYLLYQDDWYILSSKVENSPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLF HDNBYLLYQDDWYILSSKVENSPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLF LQTAAQKVGRDFFTFIKTDNTCGPEPPLVERLEKKVEEGERTIIKEVEEIEEEV 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	RICCGLDSRGI:	tch 34.1%; Score 2557; DB 2; Lengt al Similarity 100.0%; Pred. No. 9.9e-151; 477; Conservative 0; Mismatches 0; Inde MALAPHSNELA-WHETIKYYVGSKLPGHKRFSWGWEDYFGSIVVAKICSS	Jaros Diolaxanthin de-epoxitase precursor - common tobacco ispecies: Nicotiana tabacum (common tobacco) species: Nicotiana tabacum (common tabacum) species: Nicotiana tabacum (common tabacco) species: Nicotiana tabacum (common tabacum (common tabacco) species: Nicotiana tabacum (common tab	ALIGNMENTS	\$64942 \$67593 \$59413 JE0120 A24594 C48951
TEVEKLEGRALPIRKL 477	IIPE 8		Length 478; Indels 0; Gaps 0; KICSSRRIPRYFRKSP 533 [60 KICSSRRIPRYFRKSP 60	t_change 24-Mar-1999 ipocalin family, the first ide 33123 ssive light redicted <mat></mat>		probable membrane transport protein probable membrane glycoprotein A - m probable major sur nisB protein - Lac

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Glodek, A.; Zhou, L.; OVELDECA, A., ARTINGER, S., Seriggs, T.; Artiach, P.; Kaine, B.P.; Sykes, S. A;Authors: Utterback, T.; Cotton, M.D.; Spriggs, T.; Artiach, P.; Kaine, B.P.; Sykes, S. Smith, H.O.; Woese, C.R.; Venter, J.C.
                      A; Title: The complete genome sequence of the hyperthermophilic, sulfate reducing archaed
                                                                                                                                                                                                                  purine NTPase homolog - Archaeoglobus fulgidus
C;Species: Archaeoglobus fulgidus
C;Dacie: 05-Dec-1997 #sequence_revision 05-Dec-1997 #text_change 05-Jun-1998
C;Accession: H69378
R;Klenk, H.P.; Clayton, R.A.; Tomb, T.F.; White Coloration
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C:Genetics:
A:Map position: I
A;Introns: 72/3; 128/2; 160/3; 292/2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Molecule type: DNA
A; Residues: 1-462 <SHI>
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A;Description: Genomic sequence for Arabidopsis thaliana BAC F22013.
A;Reference number: Z14200
                                                                                                   Klenk, H.P.; Clayton, R.A.; Tomb, J.F.; White, O.; Nelson, K.E.; Ketchum, K.A.; Dodson Fleischmann, R.D.; Quackenbush, J.; Lee, N.H.; Sutton, G.G.; Gill, S.; Kirkness, E.F. Lodek, A.; Zhou, L.; Overbeek, R.; Gocayne, J.D.; Weidman, J.F.; McDonald, L. ture 390, 364 370, 1997
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      C; Accession: T00708
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N;Alternate names: protein F22013.3
C:Species: Arabidopsis thaliana (mouse-ear cress)
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100.0%; Pred. No. 6.6e-143;
tive 0; Mismatches 0;
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reticulocyte-binding protein 1 - Plasmodium vivax C;Species: Plasmodium vivax C;Species: Plasmodium vivax C;Date: 04-Mar-1993 #sequence_revision 18-Nov-1994 #text_change 28-Apr-1995 C;Accession: A42771 #sequence_revision 18-Nov-1994 #text_change 28-Apr-1995 C;Accession: A42771 #sequence_revision 18-Nov-1994 #text_change 28-Apr-1995 C;Accession: A22761 #sequence_revision 18-Nov-1994 #text_change 28-Apr-1995 C;Accession: A22771 #sequence_revision 18-Nov-1994 #text_change 28-Apr-1995 C;Accession: A22771 #sequence_revision 18-Nov-1994 #text_change 28-Apr-1995 C;Accession: A22761 #sequence_revision 18-Nov-1994 #text_change 28-Apr-1995 C;Accession: A22776 #sequence_revision 18-Nov-1994 #text_change 28-Apr-1995 Psequence_revision 18-Nov-1994 #text_change 28-Apr-1995 Psequence_revision 18-Nov-1994 #text_change 28-Apr-1995 Psequence_revision 18-Nov-1994 #text_change 28-Apr-1995 Psequence_revision 18-No
                      A;Title: A reticulocyte-binding protein complex of Plasmodium vivax merozoites. A;Reference number: A42771; MUID:92315338
A;Accession: A42771
A;Status: preliminary
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A;Residues: 1-886 <KLE>
A;Cross-references: GB:AE001032; GB:AE000782; NID:g2689355; PID:g2649562; TIGR:AF1032
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A;Reference number: A69250; MUID:98049343
A;Accession: H69378
A;Status: preliminary; nucleic acid sequence not shown; translation not shown
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1289 PELEKAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGERIIVKEVEEIEEEVEKEV 1348
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1231 --HDNEYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSII 1288
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      642 EEIR 645
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      594 -----QSLRPFYNKWLELKDAESRLESELKRRE-KLEDEISEAIAKLEEANGKA 641
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  452 IMAEYTREMKRIAEELAKADEIEKKLKERLEKVEKALEKQETVLKYRQMVDELKALENEL 511
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      405 KLKKLIAKKSSLKTRGAQLKKAVEE------LKSAERTCPVCGRELDEEHRKN 451
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    968 FFSSDDGIGRLGITRKRINGTFLLKILPPIQSA--DLRTTGGRSSRPLSAFRSGFSKGIF 1025
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        911 DEENFLRELSKEEMDV----LDGLKNEATEVEKLFGRALPIRKLMAVATHCFTSPCHDRIR 967
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          198 RISEEIKSIESLREKLSEEVRNLESRLKELEEHKSRLESLRKQESSVLQEV-----R 249
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                797 EDYIFVYYKGRNDAWDGYGGSV--LYTRSAVLPESIIPELQTAAQKVGRDFNTFIKTD-N 853
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Local Similarity
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EDY-----ENAWKNIGAVIRMLEREKERLKEFLSQEEQIKRQKEEK-----KAEIE 197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ------SILEKLLSEINQALRDVEKREGDLTREAAGIQAQLKKAEE 329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
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A;Molecule type: DNA
A;Residues: 1-2829 <GAL>
A;Experimental source: Belem strain, merozoites
A;Note: sequence extracted from NCBI backbone (NCBIN:108114, NCBIP:108115)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1200 GOMR--DIYEKLKKIAEELKEGTVNELKDANEKANKVE-PEPERNIIGHVLERITVEKDK 1256
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1329 KKLVQQVNMNLQSAIQGNAGISKELNELKGVIELLISTNYSSILEYVKKNSSESVRFSQL 1388
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1447 ALTEWEE-SEKFKOMCSSHMENAKEGKKKIEYLKNNGDGGKANITDSOMEEVGNYVSKAE 1505
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1389 ANGEFTKAEGEEKNASARLAEAEKL--KEQIVKDLDYSDIDDKVKKIEGIKREILKMKES 1446
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      111 IVLVCTFVIVPRVDAVDALKTCACLLKECRIELAKCIANPSCAANVACLQTCNNRPDETE 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1506 HAFHTVEAQVDKTKAFCESIVAYVTKMDNLFNESL-MKEVKVKCEK-----KNDEAEKY- 1559
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      171 CQIKCGDLFE--NSVVDQFNECAVSRKKCVPRKSDVGEFPVPDRNA---VVQNFNM-KDF 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1559 -SAKL-----KPYDGRI-KARVSENERKISELKEKAKV---EKKESSQLNDVSTK 1603
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         225 SGKWYITSGLNPTFDAFDCQLHEF--HMENDKLVGNLTWRIKTLDGGFFTRSAVQTFVQD 282
                                                                                                                                                                                                                                                                                            1716 KENADKRKSNFELVGSEINALLDPSTSIFI-KLKLKEYD------WTGDLKNYGVKMN 1766
                                                                                                                                                                                                                                                                                                                                                                                            1660 AA----KESYEKNLETVQNEMSRINVEEGSLTDIDKKITDIENDLLKMKKQYEEGLLQKI 1715
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1604 SILQIDNCRQQIDSVISNIGRVKQNALQYFDS----ADKSMKSVLPISEIGAEKSIDKVK 1659
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  416 EMTLFQRLLEGFKELQQDEENFVRELSKEEKEILN------ELQME------ 456
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          373 CGPEPPLVERLEKTAE----EGEKLLIKEAV------EIEEEVEK------EVEKVRDT 415
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               342 PTLPESIIPNLQKAAK---SVGRDENN-----FITTDNS------ 373
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            283 PDLPGALYNHDNEFLHYQDDWYILSSQIENKPDDYIFVYYRGRN-DAWDGYGGSVIYTRS 341
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      57 TSYKTSSFSDSSHCKDKSQICSIDTSFEEI-----QRFDLKRGMTLILEKQWRQFIQLA 110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     456 -----ATEVEKLFGRALPIRKLRMALAPHSNFLANHETIKYY 492
                                                                                                                                                                                            1767 EIHGEFTKSYNLIETHLSNATDYSVTFEKAOSLRELAEKEEEHLRREEEAIFLLNDIKK 1826
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     493 VGSKLPGHKRFSWGWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGKH 552
1887 IVKKVKESKHADY------RRDANSMYESMVTLANYFLSDEAKISS------GMEFN 1931
                                                                                               1827 VESLKILKEMMKKVSAEYEGMKRDHTSVSQLVQDMKTIVDELKTLNDISECSSVLNNVVS 1886
                                                                                                                                                                                                                                                                                                                                                                                                                                        613 TCTCLLKECRLELAKCISNPACAANV--ACLQTCNNRPDETECQ-IKCGDLFENSVVDEF 669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        553 NLSPAHSINONVPKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADAVDALK 612
                                                                                                                                                                                                                                                                                                                                        670 NECAVSRKKCVPR-KSDVGDFPVPDPSVLVQKFDMKDFSGKWEITRGLNPTFDAFDCQLH 728
                                                                                                                                                                                                                                              790 --SKVENSPE-DYIFVYYKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDFN 846
                                                                                                                                              761 FVQ------ DPKYPGILYNHDNEYLLYQDDWYILS----- 790
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H36 hyp H36 CC:D A:D Sult Sult A:D	Qy	Оу	Qy Db	Qy	Qу	Оу	QУ	Qy	Оу	Qу	Оу	Оу
RESULT 5 H36812 H36812 C;Species: saimirine herpesvirus 1 C;Species: saimirine herpesvirus 1 C;Species: saimirine herpesvirus 1 C;Species: saimirine herpesvirus 1 A;Note: host Saimiri sciureus (common squirrel monkey) A;Cott-1992 #sequence_revision 16-Oct-1992 #text_change 09-Sep-1997 C;Caccession: H36812 R;Albrecht, J R;Albrecht Data Library, January 1992 A;Accession: H36812 A;Accession: H36812 A;Accession: H36812 A;Cottents: 1-2469 <alb- 1-2469="" <alb-="" a;accession:="" a;albrecht,="" a;fitle:="" a;genetics:="" a;genetics:<="" a;gottents:="" a;note:="" a;raidue:="" a;raidues:="" annotation;="" b.;="" biesinger,="" biller,="" c.;="" c;genetics:="" cameron,="" d.;="" frames="" genome.="" given="" h36812="" herpesvirus="" is="" j.;="" j.c.:="" k.r.;="" neither="" newman,="" niciolass,="" noither="" nor="" nucleotide="" of="" primary="" protein="" protein-coding="" saimiri="" sequence="" structure="" td="" the=""><td>1391 IKMEASE 1397 </td><td>1354 TEMTLFQRLAEGFNELKQDEENFVRELSKEEMEFLDE 1390 </td><td>N 1</td><td>DNYQIVEEHK 2</td><td>1228 LYNHDNEYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDA 1268 </td><td>VQKFVQDPNQPGV 122 : VQNMLA 225</td><td>1111 IKCGDLFENSVVDEFNECAVSRKKCVPRKSDLG-EFPAPDPSVLVQNFNISDENGKWY 1167 </td><td>1051 LACAFLIVPSADAVDALKTCACLLKGCRIELAKCIANPACAANVACLQTCNNRPDETECQ 1110 ::::::::::::::::::::::::::::::::::</td><td>v 105 - 211</td><td>FFSSDDGIGRLGITRKRINGTFLLKIL 994 : : : : </td><td>881 EEIEEEVEKVEDKEVTLESKLEEGFKELORDEENFLRELSKEEMDVLDGLKMEA 934 </td><td></td></alb->	1391 IKMEASE 1397 	1354 TEMTLFQRLAEGFNELKQDEENFVRELSKEEMEFLDE 1390	N 1	DNYQIVEEHK 2	1228 LYNHDNEYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDA 1268	VQKFVQDPNQPGV 122 : VQNMLA 225	1111 IKCGDLFENSVVDEFNECAVSRKKCVPRKSDLG-EFPAPDPSVLVQNFNISDENGKWY 1167	1051 LACAFLIVPSADAVDALKTCACLLKGCRIELAKCIANPACAANVACLQTCNNRPDETECQ 1110 ::::::::::::::::::::::::::::::::::	v 105 - 211	FFSSDDGIGRLGITRKRINGTFLLKIL 994 : : : :	881 EEIEEEVEKVEDKEVTLESKLEEGFKELORDEENFLRELSKEEMDVLDGLKMEA 934 	

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                                     1097 LOTCNNRPDETE------COIKCGDLFENSVVDEFNECAVSRKKCVPRKSDLGEFPAPD 1149
                                                                                                                           1046 -----KLVGVLACAFLIVPSADAVDALKTCACLLKGCRIELAKCIANPACAANVAC 1096
    984 -- TAVDRFLKRELYNVIRKLQKQLKTLLEQQEFDNW----
                                                                                 939 KFRESNTICEIISTLVSLGSLLSKSTTVEALKDALKSIDTLKEKL------- 984
                                                                                                                                                                        879 EISDILQSNQYIHQSETIKQAFFDKSNTTINNILQLINQQKYTTVTQPMLIAVKRFLSEA 938
                                                                                                                                                                                                                999 S-ADLRTTGGRSSRPLSAFRSGFSKG---IFDIVPLPSKNELKELTAPLLL------ 1046
                                                                                                                                                                                                                                                                                                      943 RALPIRKEMAVATHCFTSPCHDRIRFFSSDDGIGRLGIT----RKRINGTFLLKILPPIQ 998
                                                                                                                                                                                                                                                                                                                                                   783 IKKEIQQVTTKQ-----KNEETLSKILADVQTLLENAKQSDTLSIPILQHYITKAGTLVG 837
                                                                                                                                                                                                                                                                                                                                                                                             883 IEEEVEKVRDKEVTLFSKLFEGFKELQRDEENFLRELSKEEMDVLDGLKMEATEVEKLFG 942
                                                                                                                                                                                                                                                                                                                                                                                                                                       723 IQSTLQLLQTCVTDLNIDKKFISNTVQQLSYIGWEVAELSHSQWNFPKADPVIPLKILDD 782
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 827 PESIIPELOTAAOKVGRD----FNTFIKTDNTCGPEPPLVERLEKKVEEGERTI-IKEVEE 882
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           676 QL--HEKSKLVEQK----LTIDANNVLTDLLHTMKQDKTDISÞAÞD-----FTTVLKN 722
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        770 ILYNHDNEYLLYQDDWYILSSKVENSPEDYIFVYYKGRND---AWDGYGGSVLYTRSAVL 826
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        570 SYKHLSALLNNIILKIQTIDTEIELKTLSTVFTSELGKDFSVVCTKKESETIMAAIKNLK 629
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 498 ISKCKSLLQFVIL----WGE------KLSIPTR-DLKTILKTELIITEIAEIALTK 542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           568 NSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADAVDALKTCTCLLKECRLELAK 627
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 518 -KICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGK------HNLSPAHSINQNVPKG 567
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                344 FNHPVERTTPGTDSLLSGINSTTKREDDLEDDDNVTSKLKEDEDDWIDD------ 393
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       420 FQR-----LLEGFKELQ-----QDEENFVRELSKEEKEILNELQMEATEVEKL 462
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    289 PYDKS--KKPP---KIPKTSKKSKKVLTKDTALTPQHKTIEEHLRELLPPITETVEDNTL 343
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              368 TTDNSCGPEPPLVERLEKTAEEGEKLLIKEAV-----EIEEEVEKEVEKVRDT--EMTL 419
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        229 HGPNIDLTSQEGLIIEISPPNTPKPTSTQKPPKTPRTPKPATPKAPKTPRKPKTPKESTI 288
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     324 -GRNDAWDGYGGSVIY------TRSPTLPESIIPNLQKAAKSVGRDFNNFI 367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               178 FSTSNVNDAIEYLSPENVQYT--GSFLYFVPKEYIGHSH------YIMNHYRVINYEKL 228
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         271 FTRSAVQTFVQDPDLPGALYNHDNEFLHYQDDWYILSSQIENKPDDYIFVYYR------ 324
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Local Similarity
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          230;
                                                                                                                                                                                                                                                          Conservative 208; Mismatches 497; Indels 396;
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δÃ В δÃ Вb Ω

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A:Molecule type: mRNA
A:Residues: 1412-1518,'R',1520-1574,'NV',1577-1935 <KUR>
A:Cross-references: GB:M21665
A:Note: the authors translated the codon AGC for residue 108 as Arg R:Lichter, P: Umeda, P.K.; Levin, J.E.; Vosberg, H.P.
Eur. J. Biochem. 160, 419-426, 1986
A;Title: Partial characterization of the human beta-myosin heavy-chain gene which is
                                                                                                                                                                                                                                                                                   A; Accession: B28908
                                                                                                                                                                                                                                                                                                                                              A; Title: Molecular cloning and characterization of human cardiac alpha- and beta-form
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Molecule type: DNA
A; Molecule type: DNA
A; Residues: 1-87,'Q',89-106,'E',108-177;1325-1702,'DR',1705-1786,1788-1803,'E',1804-1
R; Yamauchi-Takihara, K.; Sole, M.J.; Liew, J.; Ing, D.; Liew, C.C.
Proc. Natl. Acad. Sci. U.S.A. 86, 7416-7417, 1989
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A; Molecule type: DNA
A; Residues: 1-106, 'E',108-671, 'LYH',675-857, 'A',859-941, 'NV',944-1123, 'A',1125-1158, 'A'
A; Cross-references: EMBL; X52889; NID:g29726; PID:g29727
R; Yamauchi-Takihara, K; Sole, M.J; Liew, J; Ing, D.; Liew, C.C.
Proc. Natl. Acad. Sci. U.S.A. 86, 3504-3508, 1989
A; Title: Characterization of human cardiac myosin heavy chain genes.
A; Reference number: A94224; MUID:89264452
                                                                                                                                                                                                                                                                                                             A; Reference number: A92770; MUID: 88299163
                                                                                                                                                                                                                                                                                                                                                                                                     R;Kurabayashi, M.; Tsuchimochi, H.; Komuro, I.; Takaku, F.; Yazaki, Y. Clin. Invest. 82, 524-531, 1988
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        C:Species: Homo sapiens (man)
C:Species: Homo sapiens (man)
C:Date: 31-Dec-1993 #sequence_revision 31-Dec-1993 #text_change 20-Mar-1998
C:Accession: A37102; S12733; A94224; B28908; A24997; A27858; I54254; S12458; S09331; R.Jaenicke, T.; Diederich, K.W.; Haas, W.; Schleich, J.; Lichter, P.; Pfordt, M.; Baccenomics 8, 194-206, 1990
Genomics 8, 194-206, 1990
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Residues: 1-1935 CJAE>
A;Cross-references: GB:M57965; GB:M30603; NID:g179507; PID:g179508; GB:M30604; GB:M30 R;Liew, C.C.; Sole, M.J.; Yamauchi-Takihara, K.; Kellam, B.; Anderson, D.H.; Lin, L.; Nucleic Acids Res. 18, 3647-3651, 1990
A;Title: Complete sequence and organization of the human cardiac beta-myosin heavy ch A;Reference number: S12733; MUID:90301496
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A:Title: The complete sequence of the human beta myosin heavy chain gene and a compar A:Reference number: A37102; MUID:91065634
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A; Residues: 1-19:
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Qy dq	Qy db	da G	OV Db	Qy	Qy Db	Dp 4d	Db Db	Qy	Qy Db	ДĎ	Qy !	Qy Db	Дb	Qy	B .	g B	Ϋ́	da VQ	Db	Qy S	y Qy	ф	Qy	Query Ma Best Loc Matches
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Query Match Best Local Similarity 17.9%; Score 146; DB 2; Length 2748; Matches 283; Conservative 232; Mismatches 581; Indels 486; Gaps 72; Qy 62 SSFSDSSHCKDKSQICSIDTSFEEIQRFDLKRGMTLILEKOWROFIQLAIVLVC 115 Db 748 SAYEDLVKCKENPDVEFLKEKSAKLGHTVVSSEEYSELQRKYSELEKEVBQPS 800 Qy 116 TFVIVPRVDAUDALKTCACLLKECRIELAKCIANPSCAANVACLQTCNNRPDET 169 B01 LAYLVEHAKATDHHLLSDSAYEELVKCKENPDMEFLKEKSAKLGHTVVSNEAYSEL 856 Qy 170 ECQI	RESULT 7 \$57976 nuclear migration protein NUM1 - yeast (Saccharomyces cerevisiae) N:Alternate names: protein YD8358.06; protein YDR150w C:Species: Saccharomyces cerevisiae C:Species: Saccharomyces cerevisiae C:Species: S57976; S19052; S17018 R:Murphy, L:, Richards, C.; Harriss, D. A:Reference number: S57971 A:Reference number: S57971 A:Residues: 1-2748 <mur> A:Residues: 1-2748 <mur> A:Cross-references: EMBL:E50046; NID:9899393; PID:9899399; MIPS:YDR150w MOI. Gen. Genet. 230, 277-287, 1991 A:Reference number: S19052; MUID:92079907 A:Residues: 1-1569, V, J.571-1821, K',1823-1959, RHL',1963-1970, 'RN',1973-2048, 'N', 2050-2 A:Cross-references: EMBL:X61236; NID:94071; PID:94072 A:Cross-references: SGD:NUM1 A:Cross-references: SGD:S0002557; MIPS:YDR150w A:Map position: 4R</mur></mur>	Qy 1051 LACAFLIVPSADAVDAIKTCACLLKGGRIELAKGIANPAGAANVACLQTGNNRPDETECQ 1110 Db 1327 NALAHALQSARHDCDLLREQYEEETEAKAELQRVLEKANSEVAQWRT
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topoisomerase I - Plasmodium falciparum C;Species: Plasmodium falciparum C;Species: Plasmodium falciparum C;C;Date: 08-Jul-1995 #sequence_revision 21-Jul-1995 #text_change 09-Sep-1997 C;Accession: S54174 R;Tosh, K.T.; Kilbey, B.J.K. January 1995 R;Tosh, K.T.; Kilbey, B.J.K. January 1995 R;Reference number: S54174 A;Reference number: S54174 A;Accession: S54174 A;Accession: S54174

A;Molecule type: DNA A;Residues: 1-839 <TOS> A;Cross-references: EMBL:X83758; NID:g790481; PID:g790482

1.9%; Score 144.5; DB 2; Length 839; Query Match 17.3%; Pred. No. 0.28; Best Local Similarity 17.3%; Pred. No. 0.28; Matches 191; Conservative 176; Mismatches 390; Indels 347; Gaps

352 LOKAAKSVGRDFNNFITTDNSCGPEPPLVERLEKTAEEGEKLLIKEAVEI--EEEVEKEV 409

410 EKVRDTEMTLFORTLEGFKELOQDEENFVRELSKEEKEILNELOMEATEVEKLFGRALPI 469

79 SKRKSNELKEKNNLKEGKKKYVEKKSRTV----KDETKLTNVIKKETQNNKK-----PK 128

24 INKIKONLG---NN--KSCNSRSSKKESIKKOKSNSELGIKKNTKKSLGIKKEEEKKKOI 78

470 RKLRMALAPHSNELANHETIKYYVGSKLPGHKRESWGWEDYFGSIVVAKICSSRRIPRYF 529

A; Status: preliminary

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232 ENETKLKKGDISNFKFID----

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650 ETECQIKCGDLFENSVVDEFNECAVSRKKCVPRKSDVGDFPVPDPSVLVQXFDM------ 704
                                                704 KDESGKWEITRGLNPTFDAFDCQLHEFHTEENKLVGNLSWRIRTPDGG-----FETRSAV 758
272 KEEEKKMRMEKELPYTYALVDWIREKISSNKAEPPGLFRGRGEHPKOGLLKKRIFPEDVV 331
                                                                                                              ._...FMPIKDHLLKLREEKLNKTKEE 271
                                           Query Match 1.9%; Score 144; DB 2; Length 2166; Best Local Similarity 16.8%; Pred. No. 1.2;
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TIGR: BB0512

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Ouery Match Best Local Similarity 17.9%; Score 143.5; DB 2; Length 1558; Matches 206; Conservative 153; Mismatches 377; Indels 413; Gaps 50; 7 347 SIIPNLOK-AAKSVGRDFNNFITTDNSCGPEPPLVERLEKTAEEG 390 8 11 1 1 1 1 1 1 1 1 1	OY 955 THCFTSPCHDRIRESSDDGIGRLGITRKRING

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                                                                                                                                                                                                                                                                                                                                                                              1173 NPTFDAFDCQLHEFHTEGDNKLVGNISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLYNHD 1232
                                                                                                                         1342 EEVEKEVEKV--GRIEMTLFQRLAEGFNELKQDEE-----NEVRELSKEEMEFLDEIKM 1393
                                                                                                                                                                 1335 DIDEDIGEDKDEVIDLIVQKEKRIEKVKEKKKKLEKKVEEGVSGLKKHVDEVMKYVQKID 1394
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1446 FASYVVGFF 1454
                                        1394 EASEVEKLF 1402
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                                                                                         -NVLKQNQDFFSKVKNFVKKYKVFAAPFISAVAA 1445
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RESULT S06006

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R.McNally, E.M.; Kraft, R.; Bravo-Zehnder, M.; Taylor, D.A.; Leinwand, L.A. J. Mol. Biol. 210, 665-671, 1989

A.Title: Full-length rat alpha and beta cardiac myosin heavy chain sequences. Compari A.Reference number: S07535; MUID:90133919

A.Recession: S07536

A.Status: nucleic acid sequence not shown
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Nucleic Acids Res. J?, 7529-7530, 1989
A;Title: Complete rucleotide sequence of full length cDNA for rat beta cardiac myosin A;Reference number: S06006; MUID:90016823
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Cross-references: G/ M32688; NID: 9205598; PID: 9205599 A; Cross-references: G/ M32688; NID: 9205598; PID: 9205599 A; Cross-references: G/ M32688; Myosin motor domain hocker coiled c (Keywords: actin binding; AIP; cardiac muscle; coiled c (Keywords: actin binding; AIP; cardiac motor) P: 178-185/Region: nucleotide-binding motif A (P-loop) F; 548-585/Region: actin binding #status predicted F; 655-677/Region: actin binding #status predicted F; 655-677/Region: actin binding #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 R;Mahdavi, V.; Lompre. A.M.; Chambers, A.P.; Nadal-Ginard, B. Eur. Heart J. 5, 181-191, 1984
A;Title: Cardiac myosin heavy chain isozymic transitions during development and under A;Reference number: 153305; MUID:85179510
A;Accession: 167441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Molecule type: mRNA
A; Residues: 1-1935 < KRA>
A; Residues: 1-1935 < KRA>
A; Cross-references: EMBL; X15939; NID: 956656; PID: 956657
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A:Status: preliminary: translated from GB/EMBL/DDBJ A;Molecule type: mRNA A;Residues: 1871-1935 <RES>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A; Residues: 1-950, 'RK' 953-1935 <MCN>
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F;839-1279/Region: S2
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        375 PDGTE-----LADKSAYLMGLNSADLLKGLCHPRVKVGNEYVTKGQNVQQVAYAIGALA 428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             166 PDETECQIKCGDLFENSVVDQFNECAVSRKKCVPRKSDVGEFPVPDRN-----AVV 216
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 429 KSVYEKMEN--WMVTR-INATLETKOPROYFIGVLDIAGFEIFDENSFEQLCINETNEKL 485
                                                                                                                                                                                                                              546 MTFKAKLYDNHLGKSNNFQKPRNIKGKQEAH----FSLIHYAGTVDYNILGW-----L 594
                                                                                                                                                                                                                                                                                                                                                                                                           256 VGNLTWRIKTLDGGFFTRSAVQ-TFVQ------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               217 QNENMKDESGKWYITSGLNPT-----
648 SALH-RENLNKLMTNLRST-
                                                     397 EAVEIEEEVEKEVEKVRDTEMTLFORLLEGFKELQQDEENFVRELSKEEKE----
                                                                                                             595 QKNKDPLNETVVGLYQKSSLKLLSNLFANY-----AGADAP-VDKGKGKAKKGSSFQTV 647
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Local Similarity
                                                                                                                                                                                                                                                                                       PDLPGALY-NHDNEFLHYQDDWYILSSQIENKPDDYIFVYYRGRND----AWDGYGGSVI 337
                                                                                                                                                                      YTRSPTLPESIIPNLQKAA-KSVGRDFNNFITTDNSCGPEPPLVERLEKTAEEGEKLLIK 396
                                                                                                                                                                                                                                                                                                                                                   QQFFNHHMFVLEQEEYKKEGIEWTFIDFGMDLQACIDLIEKPMGIMSILEEECMFPKAID 545
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative 218; Mismatches 558;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             coiled coil #status predicted <COI>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1.9%; Score 142.5; 1
16.7%; Pred. No. 1.2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ------FDAFDCQLHE---FHMENDKL 255
         ----HPHFVRCIIPNETKSPGVMDNPL 688
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       homology coil; heart; hydrolase; methyl
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels 459;
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1382 -----
                                                     1538 LELQSALEEAEASLEHEEGKILRAQLEFNQIKAEIERKLAEKDEEMEQAKRNHLRVVDSL 1597
                                                                                                     1331 RIIVKEVEBIEEEVEKEVEKVGRTEMTLFQ------RLAEGFNELKQDEENFVRELS-- 1382
                                                                                                                                                  1478 STELFKLKNAYEESLEHLETFKRENKNLQEEISDLTEQLGSTGKSIHELEKIRKQLEAEK 1537
                                                                                                                                                                                                    1277 YTRSSVLPNSIIPELE-----KAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGE 1330
                                                                                                                                                                                                                                                       1439 AAALDKKQ----RNFDKILVEWKQKYEESQSELESSQKE------ARSL 1477
                                                                                                                                                                                                                                                                                                                                                                                                       1157 FNISDFNGKWYITSGLNPTFDAFDCQLHEFHTEGDNKLVGNISWRIKTLDSGFFTRSAVQ 1216
                                                                                                                                                                                                                                                                                                    1217 KFVQDPNQPGVLYNHDNEYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDAWDGYGGAVV 1276
                                                                                                                                                                                                                                                                                                                                                       1403 ------AVEAVNAKCSSLEKTKHRLQNEIEDLMVD------VERSNAA 1438
                                                                                                                                                                                                                                                                                                                                                                                                                                                      1371 WRT----- KYETDAIQRTEELEEAKKKLAQRLQDAEE----- 1403
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1097 LQTCNNRPDETECQIKCGDLFENSVVDEFNECAVSRKKCVPRKSDLGEFPAPDPSVLVQN 1156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1313 EDLKRQLEEEVKAKNALAHALQSARHDCDLLREQYEEETEAKAELQRVLSK--ANSEVAQ 1370
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1037 KELTAPLILKLVGVLACAFLIVPSADAVDALKTCACLLKGCRIELAKCIANPACAANVAC 1096
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1265 ETQRSVNDL-----TRQRAKLQTENGELSRQLDEKEALISQLTRG-----KLTYTQQL 1312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1222 SEFKLELDD----VTSNMEQIIKAKANLEKM-----CRT--LEDOMNEHRS-----KAE 1264
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1162 EMNKKREAEFOKMRRDLEEATLQHEATAAALRKKHADSVAELGEQIDNLQRVKQALEKEK 1221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1103 QLQKKLKELQARIEELEEEL-EAERTARAKVEKLRSDLSRELEEISERLEEAGGATSVQI 1161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1043 KVRMDLERAKRKLEGDLKLTQESIMDLENDKQQLDERLKKKDFELNALNARIEDEQALGS 1102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           980 ITRKRINGTFLLKILPPIQSADLRTTGGRSSRPL---SAFRSGFSKGIFDIVPLPSKNEL 1036
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           920 SKBEMDVLDGLKMEATEVEKLFGRALPIRKLMAVATHCFTSPCHDRIRFFSSDDGIGRLG 979
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             858 E------PPLVERLEKKVEEGERT-----IIKEVEEIEEEVEK------ 890
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             823 SA-----VLPESIIPELQTAAQKVG----RDF----NTFIKTDNTCGP 857
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             994 KEKKALQEAHQQALDDLQAEEDKVNTLTKAKVKLEQQV------DDLEGSLDQDK 1042
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             763 QDPKYPGILYNHDNEYLLYQDDWYILSSKVENSÞEDYIFVYYKGRNDAWDGYGGSVLYTR 822
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               969 -----EIIVKLT 993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             703 MKDFSGKWFITRGLNPTFDAFDCQLHEFHTEENKLYGNLSWRIRTPDGGFFTRSAVQKFV 762
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            911 NKIQLEAKVKEMTERLEDEEEMNAELTAKKRKLEDECSELKRDIDDLELTLAKVEKEK-- 969
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            663 NSV-----VDEFNE------CAVSRK---KCVPRKSDVGDFPVPDPSVLVQKFD 702
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               855 EFGRVKDALEKSEARRKELEEKMVSLLQE----KNDLQLQVQAEQDNLADAEERCDQLIK 910
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 807 RRDSLLIIQWNIR------AFMGVKNWPWMKLYFKIKPLLKSAETEKEMANMKE 854
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               556 PAHS---INQNVPKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADAV---- 609
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              496 KLPGHKRFSWGWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGKHNLS 555
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              689 VMHQLRCNGVLEGIRICRKGFPNRILYGDFRQRYRILNPAAIPEGQFIDSRKGAEKLLGS 748
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           -----DALKTCTCLLKECRLELAKCISNPACAANVACLQTCNNRPDETECQIKCGDLFE 652
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          -----KEEME-FLDEIKMEASEVEKLFGKA 1405
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S S S 85 B

δÃ Дb Qy B δÃ В Qγ B QΥ В Qy g Qγ В Qγ Дb QΥ В Qγ 밁 δÃ DЪ Qy 뭕 Š DЪ δÃ DЬ Ŋ 밁 Ω B QΥ

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C;Date: 12-Feb-1999 #sequence_revision 12-Feb-1999 #text_change 12-Feb-1999 (2;Accession: A71928 R;Alm R;A.; Ling, L.S.L.; Moir, D.T.; King, B.L.; Brown, E.D.; Doig, P.C.; Smith, D.; Ives, C.; Gibson, R.; Merberg, D.; Mills, S.D.; Jiang, Q.; Taylor, D.E.; Vovis, G.F. Nature 397, 176-180, 1999
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A:Residues: 1-1819 <ARN>
A:Cross-references: GB:AE001481; GB:AE001439; NID:g4155005; PID:g4155007
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A;Reference number: A71800; MUID:99120557
A;Accession: A71928
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728 VSKAKNEAERKECE------KLLTPE-----ARKLLEEAKKSVKAYKDCVLRARNE 772
                                                          723 FDCQLHEFHTEENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILY------ 773
                                                                                                                          685 NQALD----CLKNAKTDEERKECLKDLP------KDLQKKVLAKESVRVYLDC 727
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1598 QTSLDAETRSRNEALRVKKKMEGDLNEMEIQLSHANRMAAEA 1639
                                                                                                                                                                                    663 NSVVDEFNECAVSRKKCVPRKSDVGDFPVPDPSVLVQKFDMKDFSGKWFITRGLNPTFDA 722
                                                                                                                                                                                                                                                         629 EKKECEKLITPEAKKKLEEAK----KSVRAYLDCVSKAKNEAERKECEKLITPEAKKLLE 684
                                                                                                                                                                                                                                                                                                                      617 LLKEC-----RLELAKCISNPACAANVACLQTCNNRPDETECQ----IKCGDLFE 662
                                                                                                                                                                                                                                                                                                                                                                                       575 LKAYKDCASQAKTEAEKKECEKLLTPE-----AKKLLEEEAKESVKAYLDCVSQAKT-EA 628
                                                                                                                                                                                                                                                                                                                                                                                                                                              571 CKFPKDVA------LMVWEKWGQFAKTAIVAIFILSVASKADAVDALKTCTC 616
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  516 ARNEKEKQECEKLLTPEAKKLLENQALDCLKNAKTDEERKECL-KNLPKDLQSDTLAKES 574
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        524 RIPRYFRK-----SPRICCGLDSRGLQLFSHGKHNLSPAHSINQNVPK------GNSG 570
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             470 QQALDCLKNAKTDEERKECLKN----IPQDLQKELLADM------SVKAYKDCVSR 515
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          464 GRALPIRKLRMALAPHSNFLANHETIKYYVGSKLPGHKRFSWGWEDYFGSIVVAKICSSR 523
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           412 KECLKLINDPEIREKFRKELELQKELQEYKDCIKNAKTEAEKNECLKGLSKEA--IERLK 469
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     406 EKEVEKVRDTEM-TLFQRLLEGFKELQQDEENFVRELSKEEK-EILNELQMEATEVEKLF 463
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  355 KTLEAYNDCI---KNAKTEEERIKCLDLIKDENLKKSLLNQQKVQVALDCLKNAKTDEER 411
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   358 SVGRDFNNFITTDNSCGPEPPLVERLEKTAEEGEK--LLIKEAVEI-----EEEV 405
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    312 -----YLNIAEIEDK--NPLRAFYECISN-----GGN--YEECLKLIKD--KKLQDQMK 354
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  298 HYQDDWYILSSQIENKPDDYIFVYYRGRNDAWDGYGGSVIYTRSPTLPESIIPNLQKAAK 357
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               274 ----EIQIRQ----EYNRLLKERNEKGNMIDKNLF-----FNDDPN--RTLYN----- 312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            238 FDAFDCQLHEFHMENDKLVGNLTWRIKTLDGGFFTRSAVQTFVQDPDLPGALYNHDNEFL 297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       178 LFENSVVDQFNECAVSRKKCVPRKSDVGEFPVPDRNAVVQNFNMKDFSGKWYITSGLNPT 237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             . Match 1.9%; Score 142.5; DB 2; Length 1819; Local Similarity 19.0%; Pred. No. 1.1; Local Similarity 199; Mismatches 524; Indels 417;
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                                                                                                                                                                                                                                                                                                                  nitrite reductase (NAD(P)H) large subunit - Aquifex aeolicus
C:Species: Aquifex aeolicus
C:Date: 08-May-1998 #sequence_revision 08-May-1998 #text_change 08-May-1998
C:Accession: C70319
A;Molecule type: DNA
A;Residues: 1:1002 <AQF>
A;Coss-references: GB:AE000678; NID:g2982921; PID:g2982926; GB:AE000657
A;Experimental source: strain VF5
C;Genetics:
                                                                                                                                                    A; Title: The complete genome of the hyperthermophilic bacterium Aquifex aeolicus. A; Reference number: A70300; MUID: 98196666 A; Accession: C70319
                                                                                                                                                                                                                                                                                        R;Deckert, G.; Warren, P.V.; Gaasterland, T.; Young, W.G.; Lenox, A.L.; Graham, D.E.;
                                                                                                                           A;Status: preliminary; nucleic acid sequence not shown; translation not shown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1071 ACLIKGCRIEL-----AKCIANPACAANVACLQTCNNRPDETECQ----IKCGDLFENS- 1121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1042 TPEARKLLEQEVKKSVKAYLDCVSRARNEKEKQECEKLLTPEARKLLENQALDCLKNAKT 1101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1041 APLILKEV-----GVLA------CAFLIVPSA-----DAVDALKTC-- 1071
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1162 KSVKAYLDC-VSKAKNEAEKKECEKLLTPEARKLLEE------AKESVKAY 1205
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1121 -VVDEFNECAVSRKKCVPRKSDLGEFPAPDPSVLVQNFNISDFNGKWYITSGLNPTFDAF 1179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1180 -DCQLHEFHTEGDNKLVGNISWRIKTLDSGFFTRSAVQKFVQDFNQPGVLYNHDNEYLHY 1238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  773 KEKQECEKLLTPEARKLLEES-KKSVKAYLDCVSKAKNEAERKECEKLLTPEARKLLEEA 831
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     773 --NHDNEYLLYQDDWYILSSKVENSPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLPESI 830
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1389 CLEGLSDSERALILGIKRQADEVDRIY 1415
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1332 DEEKRKCQNLYSDLIQEIQNKKAQNKQN----QLSKTERLHQASECLDNLDDFTDQEAIEQ 1388
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1355 E-----MTLFQRLAEGF-NELKQDEENFVRELSKEE------MEFLDE------ 1391
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1276 RQQKDKAIKDCLK--NADPNDRAAIMKCLDGLSDEEKL--KYLQEAREKAVLDCLKTART 1331
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1295 AKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGERIIVKEVEEIEEEVEKEVEKVGRT 1354
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1227
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        995 ERKECE----KLLTP----EARKLLEEAKESVKAYKDCVSRARNE----KEKQECEKLL 1041
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        981 TRKRINGTFLLKILPPIQSADLRTTGGRSSRPLSAFRSGFSKGIFDIVPLPSKNELKELT 1040
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             945 QALDCIKNAKTEAEKKRCVKDLPKDLOKKVLA-----KESVRVYLDCVSKAKNEA 994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             925 DVLDGLKMEATEVE-KLEGRALP---IRKLMAVATHCETSPCHDRIREFSSDDGIGRLGI 980
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     884 E-EEVEKVRDKEVTLFSKLFEGFKEL------QRDEENFLRELSKE-----EM 924
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             832 KESVKAYKDCVSRARNE--KEKQEC--EKLLTPEARKLLEESKKSVKAYLDCVSKAKNEA 887
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                831 IPELQTAAQKVGRDFNTFIKTDNTCGPEPPLVERLEKKVEEGERT-----IIKEVEEI 883
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1391 ----- IKMEASEVEKLF 1402
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ERKECEKLLTPEA --- RKLLEEAKESVKAYKDCVSRARNEKEKQECEKLLTPEAKKLLEN 944
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EAEKKRCVKDLPKDLQKKVLAKESVKAYLDCVSRARNEKEKKECEKLLTPEARKLLEESK 1161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PEARKLLEQEVKKSVKAYLDCVSRARNE-----KEKQECEKLLTPEARKFLEKQ 1275
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -------VSRARNEKEKO------ECEKLLT 1226
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EY MARCH LOCAL SIMILARITY 20.1%; SCOVE 141; DB 2; Length 1002; ches 192; CORSETVALE 148; MISRAECRES 314; Indels 300; Gaps 54; ches 192; CORSETVALE 148; MISRAECRES 314; Indels 300; Gaps 54; ches 192; CORSETVALED 148; MISRAECRES 314; Indels 300; Gaps 54; ches 192; CORSETVALED 158; MISRAECRES 314; Indels 300; Gaps 54; polymorphism 148; MISRAECRES 314; Indels 300; Gaps 54; polymorphism 149; Indels 310; I

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C;Genetics:
A;Genet : Imp3
A;Genetic code: SGC3
C;Superfamily: surface-located membrane protein lmp3; tetratricopeptide repeat homology
C;Reywords: duplication; membrane protein
F;12-4/Domain: signal sequence #status predicted <SIG>
F;25-1302/Product: surface-located membrane protein Lmp3 #status predicted <MAT>
F;993-1026/Domain: tetratricopeptide repeat homology <TT1>
F;1089-1120/Domain: tetratricopeptide repeat homology <TT2>
F;1089-1120/Domain: tetratricopeptide repeat homology <TT1>
F;1154-1190/Domain: tetratricopeptide repeat homology <TT14>
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C;Accession: JC5009
C;Accession: JC5009
A; Jensen, L.T.; Brock, B.; Birkelund, S.; Christiansen, G.
J. Bacteriol. 178, 2775-2784, 1996
A:Title: Analysis of 0.5-kilobase-pair repeats in the Mycoplasma hominis lmp gene syst A;Reference number: JC6009; MUID:96213016
A;Accession: JC6009
A;Accession: JC6009
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c;Species: Mycoplasma hominis
C:Date: 15-Aug_1996 #sequence_revision 18-Oct-1996 #text_change 05-Dec-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Molecule type: DNA
A; Residues: 1-1302 <LAD>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches 173;
900 PDYSTLISELTSKRDS-KNSITNSSNKSDIETANTELKQALAKANTDKDQADNLARSTKE 958
                                                     692 PDPSVLVQKFDMKDESGKWFITRGLNPT-----726
                                                                                                    847 TASMOSAKSSLDAKVTEITKKLETFNKDKDVKFKELEOTRK-----DIDEFINTNKTN 899
                                                                                                                                                       638 VACLOTCNNRPDETECQI-KCGDLFENSVVDEFNECAVSRKKCVPRKSDVGDF-----PV 691
                                                                                                                                                                                                            797 KSTKEQLNNSISSA--NTLLAKLTDKDNTIQQAKT-----ELEKEVQK--ANQAVASNN 846
                                                                                                                                                                                                                                                              579 LMVWEKWGQFAKTAIVAIFILSVASKADAVDALKTCTCLLKECRLELAKCISNPACAA-N 637
                                                                                                                                                                                                                                                                                                                   753 TSKR------DSKNSVTNSSNKSDIETANTELKQALAKANTDKAQADNLA 796
                                                                                                                                                                                                                                                                                                                                                                   520 CSSRRIPRYFRKSPRICCGLDSRGLQLFSHGKHNLSPAHS-INONVPKGNSGCKFPKDVA 578
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             460 EKLFGRALPIRKLRMALAPHSNFLANHETIKYYVGSKLPGHKRFSWGWEDYFGSIVVAKI 519
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  687 LNNPTSMQSAKESLDAKVTEITKKLETF---NKDKDVKFKELEKTRKDI------ 733
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    637 EANKSIKEQLSDSITNANQ------LLNKL----VDSDKDIQKAKTELSQEIQSASQELN 686
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      354 KAAKSVGRDENNFITTDNSCGPEPPLVERLEKTAEEGEKLLIKEAVEIBEEVEKEVEKVR 413
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            595 LTNAKDDKKSV-------TKSSNKSEIIAANDELKQALDKAKVAKDQID 636
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              310 IENKPDDYIFVYYRGRNDAWDGYGGSVIYTRSPTLPESIIPN-----LQ 353
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   558 KDKDA------KFKELEQ---TRKDIDNFLTDD-----VKNNPN-----YATLVKD 594
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   250 MENDKLVGNLTWRIKTLDGGFFTRSAVQTFVQDPDLPGALYNHDNEFLHYQDDWYILSSQ 309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     505 ---NDSEIVKAKESLNAEITNANKAVNQNDNASMQSAK----SSLDDKVTKIQNQLTEFN 557
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       190 CAVSRKKCVPRKSDVGEFPVPDRNAVVQNFNMKDFSGKWYITSGLNPTFDAFDCQLHEFH 249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             445 KSVTNSSNKSDIIAANEALIQALADANKAKDQVDEANKSIKEQLNALIDKANTLLPQLND 504
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            145 KCIANPS-----CAANVACLQT------CNNRPDETECQIK--CGDLFE--NSVVDQFNE 189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Match 1.9%; Score 140.5; Di Local Similarity 18.7%; Pred. No. 0.92;
                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -----DTEMTLFQRLLEGFKELQQDEENFVRELSKEEKEILNELQMEATEV 459
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  123;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mismatches 312; Indels 315; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB 2; Length 1302;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    40;
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Db 959 CLINKSISSANTILAKLTDKDNTIQQAKTELEKEVQKANQAVASNNTASMQSAK Qy 765 PKYPGILYNHDNEYLLYQDDWYILSKYENSPED Db 1016 AKVTEITKKLETFNKDKDVKFRELEOTRKDIDEFINTNKTNPNYSTLISELTSKRD QY 803 YYKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDENTFIKTD Db 1072SKNSITNSSNKSDIETANTELKQALAKANTDKAQADNLARSTKEQLNKSISSAN QY 857 PEPPLVERLEKKVEEGERTIIKEVEEIEEEVEKVRDKEY Db 1127LLAKLTDKDNTIQQAKTELEKEVQKANQAVASNNTVSMQSAKSSLDTK QY 899 SKLFEGFKELQDEENFLRELSK 921	patical protein MJ1672 - Methanococcus jannaschii la-Sep-1996 #sequence_revision 13-Sep-1996 #text_change 10 ssion: F64508 C.J.; White, O.; Olsen, G.J.; Zhou, L.; Fleischmann, R.D.; C.J.; White, O.; Olsen, G.J.; Zhou, L.; Fleischmann, R.D.; C.J.; White, O.; Olsen, G.J.; Zhou, L.; Fleischmann, R.D.; C.J.; Sadow, P.W.; Hanna, M.C.; Cotton, M.D.; Roberts, K.M.; 273, 1058-1073, 1996 3273, 1058-1073, 1996 3273, 1058-1073, 1996 3273, 1058-1073, 1996 3273, 1058-1073, 1996 3273, 1058-1073, 1996 3273, 1058-1073, 1996 3273, 1058-1073, 1996 3273, 1058-1073, 1996 3273, 1058-1073, 1996 3273, 1058-1073, 1996 3273, 1058-1073, 1996 3273, 1058-1073, 1996 3273, 1058-107	Query Match 1.9%; Score 140; DB 2; Length 800; Best Local Similarity 20.0%; Pred. No. 0.49; Matches 180; Conservative 96; Mismatches 228; Indels 394; Gaps	FPVPDPSVLVQKFDMKD	170	Qy 732 TEENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLY 782	IIPELQT	329 HFYILSYKVDENLINKLEKEINEVLFNMFRIKIYITIAEVGVTPNDFXKSEDK-ESKE 3	874 RTIIKEVEEIEEEV	LRRFEYKLEGLE

ü	726 KKVDKNALTVENCPMNWDLEVEYNEYCWTKLKSYLEGINKEMVELESLVKKENEDDLE 783	Дb
1386		Qy
725	AGIVFVNPKFEFKKAVNMAEEELENGKNYIIYEDEETE	밁
134	1299 GRDFSTFIRTDNTC-GPEPALVERIEKTVEEGERIIVKEVEEIE	Qy
670	633 -VNGK-KYKFKDNIYLVYAGGDDTLIVGAWDAVWELAKRI	B
129	GGAVVYTRSSVLPNSIIPELEKAAKSI	Qy
633		В
124:	FVQDPNQPGVLYNHDNEYLHYQDDWY	Qy
596	547 AIAFPIIENETEKRILDFDGLAEKAFERTGTRKIGILKMDVDNLGEIFTT	망
1189		Qy
546	523ENYFLKEYKLPHDSGELIIPYKIW	뭥
114:	1082 AKCIANPACAANVACLQTCNNRPDETECQIKCGDLFENSVVDEFNECAVSRKKCVPRKSD	QΥ
523	504KAIEKLESKFRVLSD	Вb
108	RIEL	Qy
503	486IHLTKNKDNLSLQREEFS	В
102	962 CHDRIRFFSSDDGIGRLGITRKRINGTFLLKILPPIQSADLRTTGGRSSRPLSAFRSGFS	Qy
486	443 AIRENESKSERICDYCASFVALTDILKNFQMEKTIKFNKAYPI	망

Search completed: October 14, 1999, 03:19:10 Job time: 2196 sec

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protein search, using sw model

October 14, 1999, 03:18:07;

Run on:

Database :

SwissProt_37:*

77977 seqs, 28268293 residues

Result

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Score

Match

Length

ВВ

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SUMMARIES

YD86_SCHPO RBP1_PLAVB

Query

155 148.5 146.1 143 142.5 137.5

11935 3660 3660 11937 11934 11934 11934 11905 11805 11

TANA_XENLA POL1_GFLV

NISB_LACLA

DMD_MOUSE RPA1_METJA

134.5 134 133.5 133.5 133.5 130.1 130.1 130.1 130.1 120.5 126.5 126.5 126.5 126.5 126.5 126.5 126.5 126.5 126.5 126.1

LEF_BACAN
Y109_YEAST
HMW2_MYCGE
YM68_CAEEL
US01_YEAST
DYHB_CHLRE

MSP1_PLAFK

MYSP_HUMAN

MYSB_MESAU

MLP1_YEAST DMD_CHICK

MYSB_RAT NUM1_YEAST MYSB_HUMAN MYSB_PIG

121 120.

SYI_METJA
YMH2_YEAST
TTC3_HUMAN
SPCA_HUMAN
CALG_HUMAN
CUT3_SCHPO

513

545

120 119 119 119 119 1117.5 117.5 117.5 117.17 117.17 116.5

MYSE_RAT
YDH6_SCHPO
YHX2_YEAST

SPCO_MOUSE

MYSA_DROME TOP1_MYCGE YM66_YEAST DYHC_DICDI ARP8_YEAST

PIF1_YEAST

CENE_HUMAN

Scoring table: Sequence: Perfect score:

BLOSUM62

US-09-075-375-2 7495

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Pred. No. is the number of results predicted by chance to have a
score greater than or equal to the score of the result being printed,
and is derived by analysis of the total score distribution.
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01-OCT-1996 (REL. 34, LAST SEQUENCE UPDATE)
01-OCT-1996 (REL. 34, LAST ANNOTATION UPDATE)
HYPOTHETICAL 222.8 KD PROTEIN C1F3.06C IN CHROMOSOME
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SPACIF3.06C.
SCHIZOSACCHAROMYCES POMBE (FISSION YEAST)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entitles requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
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                                                                                                                                                                                                                                              IKDFE---KIEQDLRACLNSSSNELKEKSALIDKKDQELNNLREQIKEQKKVSESTQSSL
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                                                                                                                                                IYTRSPTLPESIIPNLQKAAKSVGRDFNNFITTDNSCGPEPPLVERLEKTAEEGEKLLIK 396
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              SLMEKI 1462
                                                    SEVEKL 1401
                                                                                                                   ----KEV---EKVGRTEMTLFORLAEGFNELKODEENFVRELSKEEMEEL--DEIKMEA 1395
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -SKKQHDLCANFVDDLKEKSDALEQLTNEKNELIVSLEQSNSNNEALVEERSDLANRLSD 1183
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                                                                                                                                                             ---LRKEAEMTENIH-SLEEGKEETKKEIAELSSRLEDNQLATNKLKNQ 1398
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -----KDKDSLSTQYSEVCQDRDDLLDSLKGC-----
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                                                                                                                                                                                                                                            ---DLEKALKD 1348
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01-APR-1993 (REL. 2

01-APR-1993 (REL. 2

01-OCT-1996 (REL 3
1369 KKLVQQVNMNLQSAIQGNAGISKELNELKGVIELLISTNYSSILEYVKKNSSESVRFSQL 1428
                                                                                                                                                                                                                                                                                                                                         1240 GQMR--DIYEKLKKIAEELKEGTVNELKDANEKANKVE-PEPERNIIGHVLERITVEKDK 1296
                                                                                                                                                                                                                                                                                                                                                                                                                                                      1201 -----VINKHVSEMTQLESTANTLK------SNAKGKENEHDLEELN----KTK 1239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                              225 SGKWYITSGLNPTFDAFDCQLHEF--HMENDKLVGNLTWRIKTLDGGFFTRSAVQTFVQD 282
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE
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                                                             342 PTLPESIIPNLQKAAK---SVGRDFNN----FITTDNS--
                                                                                                                                                                                                                                                                                                                                                                                              171 CQIKCGDLFE--NSVVDQFNECAVSRKKCVPRKSDVGEFPVPDRNA---VVQNFNM-KDF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TRANSMEM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EMBL; M88097; G160626; -. HSSP; P36956; 1AM9.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     -1- FUNCTION: INVOLVED IN RETICULOCYTE ADHESION. SPECIFICALLY BINDS TO HUMAN RETICULOCYTE CELLS.
-1- SUBUNIT: HOMODIMER (POTENTIAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SIGNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MALARIA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CELL 69:1213-1226(1992)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "A reticulocyte-binding protein complex of Plasmodium vivax merozoites.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE; 92315338.
GALINSKI M.R., MEDINA C.C., INGRAVALLO P., BARNWELL J.W.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EUKARYOTA; ALVEOLATA; APICOMPLEXA; HAEMOSPORIDA; PLASMODIUM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Local Sinhes 283;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -!- SUBCELLULAR LOCATION: MEMBRANE-BOUND.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             57
                                                                                                                                                                                                                            AGK--VVEEMNSLKTKIEKLIQETSDDSQNELVTTSITKHLENAKG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TSNKNEILKSVKEVEDKLNLVEQNEDYKKVKNPENEKQLEAIRGSMSKLKE----- 1201
                                                                                                                                                                 PDLPGALYNHDNEFLHYQDDWYILSSQIENKPDDYIFVYYRGRN-DAWDGYGGSVIYTRS 341
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TSYKTSSFSDSSHCKDKSQICSIDTSFEEI-----QRFDLKRGMTLILEKQWRQFIQLA 110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           IVLVCTFVIVPRVDAVDALKTCACLLKECRIELAKCIANPSCAANVACLQTCNNRPDETE 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Similarity
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(REL. 25, LAST SEQUENCE UPDATE)
(REL 34, LAST ANNOTATION UPDAT
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CYTOPLASMIC.
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CELL ATTACHMENT SITE (
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Pred. No. 0.59;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mismatches 573;
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416 EMTI-ORLIGISKEL/QUDENSW YRLLANDORGKANITDSOMEEVGWYSKAE 1 1487 ALTEWEE SEKFKONGESSHWANKGKKETIKNNOOGGKANITDSOMEEVGWYSKAE 1 456 HAPHTVERQYDKTRAFCESIVANYÜEL 1 1594 -SAKI	Qy
INGDGGKANITDSQMEEVGNYVSKAE PIRKLEMALAPHSNFLANHETIKYY	EIEEEVE KDLDYSDIDDKVK

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                                                                                                           Matches 230;
                                                                                                                                             Query Match
                                                                                                                              Best Local
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2353 SVNDHMHSMEAEMIKNGLKYTPESVQNINNIYSVIEAEVKILEEIDRDYGDNYQIVEEHK 2412
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1354 TE-----EFLDE 1390
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2413 KQFSILIDRTN-----ALMDDIEIFKKENNYNLMEVNTETIHRVNDYIEKITNKLVQAK 2466
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2467 TEYBQILENIKQNDDMLQNIFLKKVSIIEYFENVKKKKESILNDLYEQERLLKIGEHLDE 2526
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ALBRECHT J.-C., NICHOLAS J., BILLER D., CAMERON K.R., BIESINGER B. NEWMAN C., WITTMINN S., CRAXTON M.A., COLEMAN H., FLECKENSTEIN B., HONESS R.W.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         01-APR-1993 (REL. 25, CREATED)
01-APR-1993 (REL. 25, LAST SEQUENCE UPDATE)
01-APR-1993 (REL. 25, LAST ANNOTATION UPDATE)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                HERPESVIRUS SAIMIRI (STRAIN 11).
VIRUSES; DSDNA VIRUSES, NO RNA STAGE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NICHOLAS J. CAMERON K.R., COLEMAN H., NEWMAN C., HONESS R.W.;
"Analysis of nucleotide sequence of the rightmost 43 kbp of
herpesvirus sainiri (HVS) L-DNA: general conservation of genetic
organization between HVS and Epstein-Barr virus.";
VIROLOGY 188:296-310(1992).
-i- FUNCTION: TEGUMENT PROTEIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GAMMAHERPESVIRINAE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PROBABLE LARGE TEGUMENT PROTEIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A. MEDLINE; 92333688.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                regu_hsvsa
                                                                                                                                                                                                 EMBL; X64346; G60385; -.
EMBL; M86409; G330993; -.
PIR; H36812; H36812.
SEQUENCE 2469 AA; 28016
                                                                                                                                                                                                                                                                                                                         This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDLINE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   "Primary structure of the herpesvirus saimiri genome.";
                                                                                                                                                                                                                                                                                       entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                  -!- SIMILARITY: HELONGS TO FAMILY THAT GROUPS TOGETHER HSV-1 UL36,
EHV-1 24, EBV BPLF1, HVS-1 64, VZV 22, AND HCMV UL48.
324 -GRNDAWDGYGGSVIY------TRSPTLPESIIPNLQKAAKSVGRDFNNFI 367
                                    178 FSTSNVNDAIEYLSPPNVQYT--GSFLYFVPKEYIGHSH------YIMNHYRVINYEKL 228
                                                                      271 FTRSAVQTFVQDPDLPGALYNHDNEFLHYQDDWYILSSQIENKPDDYIFVYYR----- 324
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       . VIROL. 66:5047-5058(1992).
                                                                                                                              Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                92230228.
                                                                                                              Conservative
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         25, CREATED)
                                                                                                                              2.1%; Score 155; DB 1; Length 2469; 17.3%; Pred. No. 0.51;
                                                                                                                                                                                                      280165 MW; 1B72F5F9 CRC32;
                                                                                                                208;
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                                                                                                                  Mismatches 497; Indels 396; Gaps
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1125 KFVEEVLESVKNLKEAKLKSLLPNGPVFTPPKFDWIHYYESNVNFHLKTINLPKVSTVAH 1184
                                                       1262 RGRNDAWDGYGGAVVYTRSSVLPNSII----
                                                                                                                                                                                         1028 PSRDVKTFIQNAPSMKAKQYAKKALKDQTQAMEIDVDPESVIEDNIKANGQKAW2---- 1083
                                                                                                                                                                                                                                       1150 PSVLVQNE--NISDFNGKWYITSGLNPTFDAFDCQLHEFHTEGDN-KLVGNISWRIKTLD 1206
                                                                                                                       1083 ---
                                                                                                                                                                                                                                                                                                                                     1097 LQTCNNRPDETE------CQIKCGDLFENSVVDEFNECAVSRKKCVPRKSDLGEFPAPD 1149
                                                                                                                                                                                                                                                                                       984 --TAVDRPLKRELYNVIRKLQKQLKTLLEQQEFDNW-----KMEVDSF-VPT 1027
                                                                                                                                                                                                                                                                                                                                                                                  939 KFRESNTICEIISTLVSLGSLLSKSTTVEALKDALKSIDTLKEKL------ 984
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                879 EISDILQSNOYIHQSETIKQAFFDKSNTIINNILQLINQQKYTTVTQPMLIAVKRELSEA 938
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           999 S-ADLRTTGGRSSRPLSAFRSGFSKG---IFDIVPLPSKNELKELTAPLLL------ 1046
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       943 RALPIRKLMAVATHCFTSPCHDRIRFFSSDDGIGRLGIT----RKRINGTFLLKILPPIQ 998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       783 IKKEIQQVTTKQ-----KNEETLSKILADVQTLLENAKQSDTLSIPILQHYITKAGTLVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     883 IEEEVEKVRDKEVTLFSKLFEGFKELQRDEENFLRELSKEEMDVLDGLKMEATEVEKLFG 942
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  723 IQSTLQLLQTCVTDLNIDKKFISNTVQQLSYIGWEVAELSHSQWNFPKADPVIPLKILDD 782
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                827 PESIIPELQTAAQKVGRD---FNTFIKTDNTCGPEPPLVERLEKKVEEGERTI-IKEVEE 882
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            770 ILYNHDNEYLLYQDDWYILSSKVENSPEDYIFVYYKGRND---AWDGYGGSVLYTRSAVL 826
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            630 EKISTRKQELHTEENYFQSVL------IAMETFQPIPLPTRVIEIQPSKKAQ 675
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       570 SYKHLSALLNNIILKIQTIDTEIELKTLSTVFTSELGKDFSVVCTKKESETIMAAIKNLK 629
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     688 DFP-----VPDPSVLVQKFDM--------KDFS------GKWFITRGLNPTF 720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                628 CISNPACAANVACLQTCNNRDDETECQIKCGDLFENSVVDEFNECAVSRKKCVPRKSDVG 687
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       518 -KICSSERIPRYFRKSPRICCGLDSRGLQLFSHGK------HNLSPAHSINQNVPKG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   463 FGRALPIRKLRMALAPHSNFLANHETIKYYVGSKLPGHKRFSWGWEDYFGSIVVA----- 518
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   344 FNHPVERTTPGTDSLLSGINSTTKREDDLEDDDNVTSKLKEDEDDWIDD------
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                                                                                                                                         SGFFTRSAVQKFVQDPNQPGVLYNHDNEYLHYQDDWYILSSKIENKPEDYIF-----VYY 1261
                                                                                                                                                                                                                                                                                                                                                                                                                                -----KLVGVLACAFLIVPSADAVDALKTCACLLKGCRIELAKCIANPACAANVAC 1096
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              QL--HEKSKLVEQK----LTIDANNVLTDLLHTMKQDKTDISPAPD-----FTTVLKN 722
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DAFDCQLHEFHTEENKLVGNLSWRIRTFDGGFFTRSAVQKF-----VQDFKYPG 769
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                                                                                             --KIQSAFQDLNFSILI-------PDDWLSL-AKEYTRPKSTLFTVIGPILL 1124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ----RENQKFESLKNTVQKLSTSEEFLKTLIDSTTLENVQLQIQ 878
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ------DTFRNNVITKLNKCMLKLK----SESVD 569
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              -----KLSIPTR-DLKTILKTELIITEIAEIALTK 542
                                        -----PELEKAAK 1296
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B QΥ Дb δÃ Вb Qγ B Qy В Qy 멍 Qy Ъ δÃ

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RL SUBMITTED (OCT-1996) TO EMBL/GENBANK/DDBJ DATA BANKS.

C: - FUNCTION: MUSCLE CONTRACTION.

CC: - SUBGUNIT: MUSCLE CONTRACTION.

CC: - SUBGUNIT: MUSCLE MYOSIN IS A HEXAMERIC PROTEIN THAT CONSISTS OF 2

HEAVY CHAIN SUBUNITS (MC), 2 ALKALI LIGHT CHAIN SUBUNITS (MLC)

CC: AND 2 REGULATIORY LIGHT CHAIN SUBUNITS (MC-2).

CC: - SUBCELLULAR LOCATION: THICK FILAMENTS OF THE MYOFIBRILS.

CC: - DOMAIN: THE ROBLIKE TAIL SEQUENCE IS HIGHLY REPETITIVE, SHOWING

CC: CYCLES OF A. 28-RESIDUE REPEAT PATTERN COMPOSED OF 4 HEPTAPEPTIDES,

CC: - PTM: TWO CYSTEINE RESIDUES IN THE SILED COILS.

CC: - PTM: TWO CYSTEINE RESIDUES IN THE SILED MANIN ARE SELECTIVELY

CC: - PTM: TWO CYSTEINE RESIDUES IN THE SILED MANIN ARE SELECTIVELY

CC: - PTM: TWO CYSTEINE RESIDUES IN THE SILED MANIN ARE SELECTIVELY

CC: - PTM: TWO CYSTEINE REQUIRED FOR MYOSIN ATPASE ACTIVITY.

CC: - PTM: TWO CHAIN CAN BE SPLIT INTO 1 LIGHT MEROMYOSIN (LMM)

CC: - THE CARDIAC ALPHA ISOFORM IS A FAST, ATPASE MYOSIN, WHILE THE

CC: - THE CARDIAC ALPHA ISOFORM IS A FAST, ATPASE MYOSIN, WHILE THE

CC: - STMITABETTY. BETCAMES TO THE MEROMYOSIN, WHILE THE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MYSB_PIG
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       SEQUENCE
                          MOD_RES
                                                                                               NP_BIND
DOMAIN
                                                                                                                                                                                                      PFAM; PF00063; myosin_head; 1.
PFAM; PF00612; IQ; 1.
MYOSIN; MUSCLE PROTEIN; COILED COIL; THICK FILAMENT; ACTIN-BINDING;
                                                           MOD_RES
                                                                                                                                     DOMAIN
                                                                                                                                                                                                                                                                                                entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                DOMAIN
                                                                                                                                                    DOMAIN
                                                                                                                                                                                         DOMAIN
                                                                                                                                                                                                    ATP-BINDING; METHYLATION;
                                                                                                                                                                                                                                                                                                                                           modified and this statement is not removed. Usage by an
                                                                                                                                                                                                                                                                                                                                                                  This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its
                                                                                                                                                                         DOMAIN
                                                                                                                                                                                                                                                                           EMBL; U75316; G1698895; -
                                                                                                                                                                                                                                                                                                                                                                                                                                               -!- SIMILARITY: BELONGS TO THE MYOSIN HEAVY CHAIN FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; MAMMALIA; EUTHERIA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              15-DEC-1998 (REL. 37, CREATED)
15-DEC-1998 (REL. 37, LAST SEQUENCE UPDATE)
15-DEC-1998 (REL. 37, LAST ANNOTATION UPDATE)
MYOSIN HEAVY CHAIN, CARDIAC MUSCLE BETA ISOFORM.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STRAIN-DOMESTICA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE FROM N.A.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ARTIODACTYLA; SUIFORMES; SUINA; SUIDAE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1338 EEIEEEVEK-----EVEKVGR-----TEMTLFQRLAEGFNELKQDEENFVRELSKEEMEFL 1388
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1389 DEIKMEASEVE 1399
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                                                                                                              839
780
839
178
       ĀΑ;
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                                                                                                                               1935
   223109 MW;
                                                                                                                                                                                                    ALKYLATION;
             METHYLATION (TRI-) (POTENTIAL).
ALKYLATION (SH-1) (POTENTIAL).
ALKYLATION (SH-2) (POTENTIAL).
                                                                                                       ATP (POTENTIAL)
                                                                    ACTIN-BINDING. ACTIN-BINDING.
                                                                                                                      COILED COIL (POTENTIAL)
                                                                                                                                                        RODLIKE TAIL (S2 AND LMM DOMAINS).
                                                                                                                                                                             GLOBULAR HEAD (S1
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F072F29E CRC32
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                                                                                                                                                                                            MULTIGENE FAMILY.
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Qу	Qy	Qy Db	Qу	ОУ	Оу	gb Qy	Qy Db	Qy Db	Qу	Оy	Db Qy	Оy	Qy Db	QУ	D Qy	QУ	Ques Best
920 SKEEMDVLDGLKMEATEVEKLFGRALPIRKLMAVATHCFTSPCHDRIRFFSSDDGIGRLG 979 : ::::	890	858 E PPLVERLEKKVEEGERT IIKEVEEIEEEVEK 890 : ::: : : : : :	, p 6	TR 82 : EK 10	703 MKDFSGKWFITRGLNPTFDAFDCQLHEFHTEENKLVGNLSWRIRTPDGGFFTRSAVQKFV /62	96		KADAVD 60 : TEKEMA 85	LQLFSHGKH 55 : VLSRMEFKK 80	448ILNELQMEAT-EVEKLFGRALPIRKLRWALAPHSNFLANHETIKYY 492	LSKEEKE 4 : : IIPNETKSPGVID 6	335 SVIYTRSPTLPESIIPNLQKAA-KSVGRDFNNFITTDNSCGPEPPLVERLEKTAEEGEKL 393 : : : :			217 QNENMKDESGKWYITSGLNPTFDAEDCOLHEFHMENDKL 255	166 PDETECQIKCGDLFENSVVDQFNECAVSRKKCVPRKSDVGEFPVPDRNAVV 216	w

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REPRESENTATION OF SERVICE OF SERV
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P12883; Q14904; Q16579;
O1-CCT-1989 (REL. 12, CREATED)
O1-JUN-1994 (REL. 29, LAST SEQUENCE UPDATE)
15-DEC-1998 (REL. 37, LAST ANNOTATION UPDATE)
MYOSIN HEAVY CHAIN, CARDIAC MUSCLE BETA ISOFORM.
MYH7 OR MYHCB.
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EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; MAMMALIA; EUTHERIA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     "The complete sequence of the human beta-myosin heavy chain gene and a comparative analysis of its product."; GENOMICS 8:194-20%(1990).
                                                                                                                                                                                          SEQUENCE OF 1-115 FROM N.A.

MEDLINE; 89264452.

YAMAUCHI-TAKIHARA K., SOLE M.J., LIEW J., ING D., LIEW
YAMAUCHI-TAKIHARA K., SOLE M.J., LIEW J., ING D., LIEW
"Characterizaticn of human cardiac myosin heavy chain
"Characterizatica of human cardiac myosin heavy chain
"PROC. NATL. ACAD. SCI. U.S.A. 86:3504-3508(1989).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         JABNICKE T., DIEUERICH K.W., HAAS W., SCHLEICH J., LICHTER P., PFORDT M., BACH A., VOSBERG H.P.;
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                                                                                                                                                                                                                                                                                                                                                                                                   "Complete sequence and organization of the human cardiac beta-myosin heavy chain gene."; NUCLEIC ACIDS RES. 18:3647-3651(1990).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LIEW C.-C., SOLE M.J., YAMAUCHI-TAKIHARA K., KELLAM B., ANDERSON D.H., LIN L., LIEW J.;
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                                                                YAMAUCHI-TAKIHARE K., SOLE M.J., LIEW J., ING D., PROC. NATL. ACAD. SCI. U.S.A. 86:7416-7417(1989).
SEQUENCE OF 1310-1935 FROM N.A.
                                                                                                                                        ERRATUM.
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cardiac
CELL 62:
WATKINS H., THIERFELDER L., ANAN R., JARCHO J., MATSUMORI A., MCKENNA W., SEIDMAN J.G., SEIDMAN C.E.;
"Independent origin of identical beta cardiac myosin heavy-chain mutations in hypertrophic cardiomyopathy.";
                                                                                                                                      WATKINS H., ROSENZWEIG A., H
SEIDMANN C.E., SEIDMANN J.G.
                                             WATKINS H.,
                                                                                           "Characteristics and prognostic implications of myosin missense mutations in familial hypertrophic cardiomyopathy."; NEW ENGL. J. MED. 326:1108-1114(1992).
                                                                                                                                                                          MEDLINE;
                                                                                                                                                                              VARIANTS HCM GLN-249; GLN-403; CYS-453 AND MET-606
                                                                                                                                                                                                                               GEISTERFER LOWRANCE A.A.T., KASS S., TANIGAWA G., VOSBERG H.-P. MCKENNA W., SEIDMAN G.E., SEIDMAN J.G.;
"A molecular basis for familial hypertrophic cardiomyopathy: a
                                                                                                                                                                                                                                                                                                                   FANANAPAZIR L., DALAKAS M.C., CYRAN F., COHN G., EP "Missense mutations in the beta-myosin heavy-chain core disease in hypertrophic cardiomyopathy.", PROC. NATL. ACAD. SCI. U.S.A. 90:3993-3997(1993).
                                                                                                                                                                                                                                                                                               VARIANT HCM GLN-403.
                                                                                                                                                                                                                                                                                                                                                                                                                  hypertrophic cardiomyopathy.";
AM. J. MED. GENET. 58:267-276(1995).
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SAEZ L., LEINWAND L.A.;
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MATSUOKA R.,
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myosin heavy chain gene in hypertrophic HUM. MUTAT. 6:197-198(1995).
                                               MOOLMAN J.C., BRINK P.A., CORFIELD V.A., "Identification of a novel Ala797Thr mutation
                                                                                                                                                                                                     ANAN R., GREVE G., THIERFELDER L., WATKINS H., MCKENNA W., SVECCHIO C., SHONO H., NAKAO S., TANAKA H., MARES A. JR., TOW SPIRITO P., ROBERTS R., SEIDMAN J.G., SEIDMAN C.E.; "Prognostic implications of novel beta cardiac myosin heavy mutations that cause familial hypertrophic cardiomyopathy.",
                                                                                                                                                                                                                                                                                                                                                                                                                                                               GREVE G., BACHINSKI L., FRIEDMAN D.L., CZERNUZEWICZ G., ANAN R., TOWBIN J., SEIDMAN C.E., ROBERTS R.; "Isolation of a de novo mutant myocardial beta MHC protein in a pedigree with hypertrophic cardiomyopathy.";
                                                                                                                                            VARIANT HCM THR-797.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AL-MAHDAWI S., CHAMBERLAIN S., CLELAND J., NIHOYANNOPOULOS P., GILLIGAN D., FRENCH J., CHOUDHURY L., WILLIAMSON R., OAKLEY C., "Identification of a mutation in the beta cardiac myosin heavy chain gene in a family with hypertrophic cardiomyopathy.";
BR. HEART J. 69:136-141(1993).
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"NOVEL missense mutation in cardiac beta myosin heavy chain gene
found in a Japanese patient with hypertrophic cardiomyopathy.";
BIOCHEM. BIOPHYS. RES. COMMUN. 188:379-387(1992).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MODIMAN J.C., BRINK P.A., CORFIBLD V.A., "Identification of a new missense mutation at Arg403, a hotspot, in exon 13 of the beta-myosin heavy chain gene
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"Differences in clinical expression of hypertrophic cardiomyopathy associated with two distinct mutations in the beta-myosin heavy chain gene. A 108 Leu-----------------
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KO Y.-L., CHEN J.-J., TANG T.-K., CHENG J.-J., LIN S.-Y., LIOU Y.-C., KO Y.-L., CHEN J.-J., LIEW C.-C.;

KUAN P., WU C.-W., LIEN W.-P., LIEW C.-C.;

"Malignant familial hypertrophic cardiomyopathy in a family with a 453Arg-->Cys mutation in the beta-myosin heavy chain gene: coexistence of sudden death and end-stage heart failure.";

coexistence of sudden death and end-stage heart failure.";

HUM. GENET. 97:585-590(1996).
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DOHLEMANN C., VOSBERG H.-P.;
"A high risk phenotype of hypertrophic cardiomyopathy associated with
a compound genotype of two mutated beta-myosin heavy chain genes.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       [24]
VARIANT HCM CYS-453.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              203 DVGEFPVPDRNAVVQ-------NFNMKDFSGKWYITSGLNPTFDAFDCQLHEF 248
1057 GDLKLTQESIMDLENDKQQLDERLKKKDFELNALNARIEDEQALGSQLQKKLKELQARIE 1116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         606 VGLYQKSSLKLLSTLFANY-----AGADAP-IEKGKGKAKKGSSFQTVSALH-RENLNK 657
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           349 IPNLOKAA-KSVGRDFNNFITTDNSCGPEPPLVERLEKTAEEGEKLLIKEAVEIEEEVEK 407
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   294 NEFLHYQDDWYILSSQIENKPD-DYIFVYYRGRND----AWDGYGGSVIYTRSPTLPESI 348
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 564 VPKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADAVDALKTCTCLLKEC-- 622
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      507 WEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGKHNLSPAHS---INQN 563
                                                                                                                                                                                                                                                                                                                                                                                                         622 -----RLELAKCISNPACAANVACLQTCNNRPDETECQIKCGDLFENSV-----VDEFNE 671
                                          825 ---VLPESIIPELQTAAQKVG-----RDF-----NTFIKTDNTCGPE------PPLVE 863
                                                                                                                                                                                                                                                                    925 RLEDEEEMNAELTAKKRKLEDECSELKRDIDDLELTLAKVEKEK------- 969
                                                                                                                                                                                                                                                                                                                                                            865 KSEARRKELEEKMVSLLQEKNDLQLQVQAEQDNLADAEERCDQLIKNKIQLEAKVKEMNE 924
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Match 1.9%; Score 146; DB 1; Length 1935; Local Similarity 16.9%; Pred. No. 1.2;
                                                                                                                                    777 EYLLYQDDWYILSSKVENSPEDYIFVYYKGRNDAWDGYGGSVLYTRSA------- 825
                                                                                                                                                                                                                       717 NPTFDAFDCQLHEFHTEENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHDN 776
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GKSANFQK-----PRNIKGKPEAHFSLIHYAGIVDYNIIGW-----LQKNKDPLNETV 605
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EVEKLEGRALP------IRKLRMALAPHSNFLANHETIKYYVGSKLPGHKRESWG 506
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EVEKVRDTEMTLFQRLLEGFKELQQDEENFVRELSKEEKE-----ILNELQMEAT- 458
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                                                                                          DDLQAEEDKVNTLTKAKVKLEQQV------DDLEGSLEQEKKVRMDLERAKRKLE 1056
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                                                                                                                                                                                                                                                                                                                                                                                                                                                         ----AFMGVKNW-PWMKLYFKIKPLLKSAEREKEMASMKEEFTRLKEALE 864
                                                                                                                                                                                    --HATENK-VKNLTEEMAGLD-----EIIAKLTKEKKALQEAHQQAL 1007
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ADDITIONAL REGIONS OF LOWER HOMOLOGY TO THE REPEAT CONSENSUS (ALWAYS STARTING WITH PROLINE) ARE FOUND IN BOTH FLANKING

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- FUNCTION: CONTRO THE INTERACTION DIVISIONAL G2 NU CYTOPLASMIC MICR	r migration in Saccharomyces cereviside is controlled by one repetitive 313 kba NUM1 protein."; N. GENET. 230:277-287(1991).	FF-GERSTENSCHLAEGER I., ZIMMERMANN F.K.,	ENCE FROM N.A [N=ATCC 28383	SACCHAROMYCES CEREVISIAE (BAKER'S YEAST). SACCHAROMYCETALES; EUKARYOTA; FUNGI; ASCOMYCOTA; HEMIASCOMYCETES; SACCHAROMYCETALES; SACCHAROMYCETACEAE; SACCHAROMYCES.	TR-1996 (KEE: 34, LAST MUNICIPALITY OF PAR TAR MIGRATION PROTEIN NUML. OR YDR150W.	00402; 1-DEC-1992 (REL. 24, CREATED) 1-DEC-1992 (REL 24, LAST SEQUENCE UPDATE)	UM	KMEGDLNEMEI	1382KEEME-FLDEIKMEASEVEKLFGKA 1405	1552 EHEEGKILRAQÜEFNQIKAEIERKLAEKDEEMEQAKRNHLRVVDSLQTSLDAETRSRNEA 1611	LAEGFNEL	1492 LEHLETFKRENKNLQEEISDLTEQLGSSGKTIHELEKVRKQLEAEKMELQSALEEAEASL 1551	IGRDFSTFIRTDNTCGPEPALVERIEKT	: 449 FDKILAEW	1231 HDNEYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPE 1290	406 AVNAKCSSLEKTKHRLQNEIEDLMVDVERS	171 GINPTFDAFDCOLHEFHTE	374KYETDAIQ	1111 IKCGDLFENSVYDEFNECAVSRKKCVPRKSDLGEFPAPDPSVLVQNFNISDFNGKWYITS 1170	327 NALAHALQSARHDCDLLREQYE	051 LACAFLIVPSADAVDALKTCACLLKGCRIELAKCIANP?	1274TSQRAKLOTENGELSRQLDEKEALISQLTRGKLTYTQQLEDLKRQLEEEVKAK 1326	GIFDIVPLPSKNELKE	1232 TSNMEQIIKAKANLEKMCRTLEDQMNEHRSKAEETQRSVNDL 1274	934 ATEVEKLEGRALPIRKLMAVATHCFTSPCHDRIRFFSSDDGIGRLGITRKRINGTFLLKI 993	1176 RDLEEATLQHEATAAALRKKHADSVAELGEQIDNLQRVKQKLEKEKSEFKLELDDV 1231	90VRDKEVTLFSKLFEGFKELQRDEENFLREL	::: 1117 ELEEEL-ESERTARAKVEKLRSDLSRELEEISERLEEAGGATSVQIEMNKKREAEFQKMR 1175	KKVEEGERTIIKEVEEIEEE

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                               1123 YLVEHAKATNHHLLSD--SAYEELVKCKENPDVEFLKEKSAKLGHTVVSNEAYSELEK-- 1179
                                                                                               1063 HAKATNHHLLSDSAYEELVKCKENPDVEFLKEKSAKLGHTVVSNEAYSELEKKLEQPSLE 1122
                                                                                                                                                             1003 TNHHLLSDSAYEDLVKCKENPDMEFLKEKSAKLGHTVVSNEAYSELEKKLEQPSLEYLVE 1065
464 GRALPIRKLRMALAPHSNFLANHETIKYYVGSKLPGHKRESWGWEDYFGSIVVAK-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DOMAIN
                                                              409 --VEKVRDTEMTLFQRLLEGFKELQQDEENFVRELSKEEKEILNE--LQMEA-TEVEKLF 463
                                                                                                                              364 -----NNFITIDNS------CGPEPPLVERLEKTAEEGEKLLIKEAV-EIBEEVEKE--- 409
                                                                                                                                                                                              325 RND---AWDGYGGSV-----IYTRSPTLPESIIPN-----LQKAAKSVGRDF--- 364
                                                                                                                                                                                                                             949 YE-----DLVKCKENPDMEFLKEKSAKLGHTVVSNEAYSELEKKLEQPSLEYLVEHAKA 1002
                                                                                                                                                                                                                                                             276 VQTFVQDPDLPGALYNHDNEFLHYQ------DDWYILSSQIENKPDDYIFVYYRG 324
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                                                                                                                                                                                                                                                                                                                                                                                                                                                          116 TEVIVPRVDAVDALKTCACLLKECRIELAKCIANPSC-----AANVACLOTCNNRPDET 169
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
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-!- SIMILARITY: CONTAINS 1 PH DOMAIN.
-!- CAUTION: IT IS UNCERTAIN WHETHER MET-1 IS THE INITIATOR.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        62 SSFSDSSHCKDKSQICSIDTSFEEIQRFDLKRGMTLILEKQWRQF-----IQLAIVLVC 115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          / Match 1.9%; Score 143; DB 1; Length 2748; Local Similarity 17.9%; Pred. No. 2.9;
                                                                                                                                                                                                                                                                                                                                                            EKKLEQPSLAYLVEHAKATDHHLLSDSAYEDLVKC------KENSDV-EF------ 900
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03; PH_DOMAIN;
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QMLIISKHDYEEKQEAIENPGYEFILEKASALGYELVSEVELDRMKQMIDSPD	167	ď
9 KLMAVATHCFTSPCHDRIRFFSSDDGIGRLGITRKRINGTFLLKILPPIQSAD 1001	94	Qy
7 LEKPIVDNASKNDVLNLCSKFSLVPLSTEEVDNMRKEHTKILNILGDPSIDFLKEKCEKY 1676	161	Db .4
APQLASAEKSSLQKRTLSDI	15/ LD/	
GPEPPLVERLEKKVEEGERTIIKEVEEIEEEVEKVRDKEVTLFSKLFE	85	Ϋ́O
IVIVDKTEYQAMKDNASNKKSLIPSTKVLDFVTM 15	Db 1543	U
9 YIFVYKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDFNTFIKTDNTC 85	Qу 79	Ю
3 EPNEYLDLNRIATTPSKEEIDNFCKQIGCYALDSKEYERLKNSLENPSKKFIEENAALLD 15	Db 148	ы
4 HDNEYLDYQDDWYILSSKVENSPED 79	Qy 77	0
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4 DCQHEFHTEENKLVGNLSWRITHTHEFTTHEFHTEENKLVGNLSWRITHTHEFT	Qy 72	n
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8 LKECRLE-LAKCISNPACAANVACLQTCNNRPDETECQIKCGDLFENSVVDEFN 6	Db 132	- ~
9 YEDLVKCKENPDMEFLK-EKSAKLGHTVVSNEAYSELEKKLEQPSLEYLVEHAKATNHH	12	_
5 PKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADAVDALKTCTCL	Qy 56	_
8 EFLKEKSAKLGHTVVSNEAYSELEKKLEQPSLAYLVEHAKATDHHLLSDSA 12	Db 121	_
FRKSPRICCGLDSRGL-QLFSHGKHNLSPAHSINQNV 5	Qy 5:	
79KLEQPSLAYLVEHAKATDHHLLSDSAYEDLVKCKENPDV 121	Db 11.	

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01-OCT-1989 (REL. 12, LAST SEQUENCE UPDATE)
15-DEC-1998 (REL. 37, LAST ANNOTATION UPDATE)
MYOSIN HEAVY CHAIN, CARDIAC MUSCLE BETA ISOFORM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    P02564;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               KRAFT R., BRAVO-ZEHNDER M., TAYLOR D., LEINWAND L.A.; "Complete nucleotide sequence of full length cDNA for rat beta cardiac myosin heavy chain.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EUKARYOTA; METAZOA; CHÓRDATA; VERTEBRATA;
RODENTIA; SCIUROGNATHI; MURIDAE; MURINAE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDLINE; 90016823.
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                                                                                                                                                                                               -!- SUBDINIT: MUSCLE MYOSIN IS A HEXAMERIC PROTEIN THAT CONSISTS OF 2
-!- SUBDINIT: MUSCLE MYOSIN IS A HEXAMERIC PROTEIN THAT CONSISTS OF 2
--- SUBDINITS (MHC), 2 ALKALI LIGHT CHAIN SUBUNITS (MLC)
--- AND 2 REGULATORY LIGHT CHAIN SUBUNITS (MLC-2).
--- AND 2 REGULARR LOCATION: THICK FILAMENTS OF THE MYOFIBRILS.
--- SUBCELLULAR LOCATION: THICK FILAMENTS OF THE MYOFIBRILS.
--- CHARACTERISTIC FOR ALPHA-HELICAL COLLED COILS.
--- CYCLES OF A 28-RESIDUE REPEAT PATTERN COMPOSED OF 4 HEPTAPEPTIDES,
--- CYCLES OF A 28-RESIDUE REPEAT PATTERN COMPOSED OF 4 HEPTAPEPTIDES,
--- CYCLES OF A 28-RESIDUE SIN THE SI DOMAIN ARE SELECTIVELY
--- CYCLES OF A 28-RESIDUE SIN THE COLLED COILS.
--- CYCLES OF A 28-RESIDUE SIN THE COLLED COILS.
--- CYCLES OF A 28-RESIDUE SIN THE SIDOMAIN ARE SELECTIVELY
--- PTM: TWO CYSTEINE RESIDUES IN THE SPLIT INTO 1 LIGHT MEROMYOSIN (LMM)
--- EACH MYOSIN HEAVY CHAIN CAN BE SPLIT FURTHER INTO
--- EACH MYOSIN HEAVY CHAIN SIDDER MYOSIN WHILE THE
--- THERE ARE 10 OR MORE MYOSIN HEAVY CHAIN GENES IN THE RAT, TWO OF
--- THERE ARE 10 OR MORE MYOSIN HEAVY CHAIN GENES IN THE RAT, TWO OF
--- WHICH ARE SPECIFIC FOR ADULT CARDIAC MYOSIN HEAVY CHAINS
--- SIMILARITY: THE PERIODICITIES OF HYDROPHOBIC AND CHARGED RESIDUES,
--- SIMILARITY: THE PERIODICITIES OF HYDROPHOBIC AND CHARGED RESIDUES,
--- SIMILARITY: THE PERIODICITIES OF HYDROPHOBIC AND CHARGED RESIDUES,
--- SIMILARITY: THE PERIODICITIES OF HYDROPHOBIC AND CHARGED RESIDUES,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MCNALLY E.M., KRAFT R., BRAVO-ZEHNDER M., TAYLOR D., LEINWAND L.A.; "Full-length rat alpha and beta cardiac myosin heavy chain sequences. comparisons suggest a molecular basis for functional differences.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MAHDAVI V., PERIASAMY M., NI "Molecular characterization in the adult heart.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Comparisons suggest a molecular J. MOL. BIOL. 210:665-671(1989).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DISCUSSION OF SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MAHDAVI V., LOMPRE A.M., CHAMBERS A.P., NADAL-GINARD B.; "Cardiac myosin heavy chain isozymic transitions during development and under pathological conditions are regulated at the level of mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            STRAIN-WISTAR; TI
MEDLINE; 85179510
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NATURE 297:659-664(1982).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE OF 1524-1935 FROM N.A.
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                 This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way use by non-profit institutions as long as its content is in no way use by and for commercial modified and this statement is not removed. Usage by and for commercial
entities requires a license agreement (See http://www.isb-sib.ch/announce/
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FUNCTION: MUSCLE CONTRACTION.
                                                                                                                                                                                   WHICH DICTATE THE ALPHA-HELICAL COILED-COIL STRUCTURE ARE
                                                                                                                                                               CONSERVED
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EMBL; M32698; G205599; --
PIR; S06006; S06006.
PIR; A02989; A02989.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 or send an email to license@isb-sib.ch).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                             217 QNENMKDESGKWYITSGLNPT---------FDAFDCQLHE---FHMENDKL 255
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        375 PDGTE----FADKSAYLMCLNSADLLKGLCHPRVKVGNEYVTKGONVQQVAYAIGALA 428
                                                                                                                                                                                                                                                                                                                                                                                                486
                                                                                                                                                                                                                                                                                                                                                                                                                        256 VGNLTWRIKTLDGGFFTRSAVQ-TFVQ------
                                                                                                                                                                                                                                                                                                         338 YTRSPTLPESIIPNLOKAA-KSVGRDFNNFITTDNSCGPEPPLVERLEKTAEEGEKLLIK 396
                                                                                                                                                                                                                                                                                                                                    546 MTFKAKLYDNHLGKSNNFQKPRNIKGKQEAH----FSLIHYAGTVDYNILGW-----L 594
                                                                                                                                                                                                                                                   397 EAVEIEEEVEKEVEKVRDTEMTLFQRLLEGFKELQQDEENFVRELSKEEKE------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Local Similarity
                                                                                                                                                                    689
                                                                                                                                                                                                                          648
                                                                                                                                         496
855 EFGRVKDALEKSEARRKELEEKMVSLLQE----KNDLQLQVQAEQDNLADAEERCDQLIK 910
                                                        807 RRDSLLTIQWNTK-----
                                                                                556 PAHS---INQNVPKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADAV----
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PF00612; IQ; 1.
P08799; lMND.
                                                                                                                                                                                                                                                                                                                                                                                                                                                    KSVYEKMEN--WMVTR-INATLETKQPRQYFIGVLDIAGFEIFDENSFEQLCINETNEKL 485
                                                                                                                                                                                                                                                                                                                                                                                              QQFFNHHMFVLEQBEYKKEGIEWTFIDFGMDLQACIDLIEKPMGIMSILEEECMFPKATD
                                                                                                                                                                                                                                                                                QKNKDPLNETVVGLYQKSSLKLLSNLFANY-----AGADAP-VDKGKGKAKKGSSFQTV 647
                                                                                                                                                                                                                                                                                                                                                                PDLPGALY-NHDNEFLHYODDWYILSSQIENKPDDYIFVYYRGRND----AWDGYGGSVI 337
                                                                                                           LDIDHNQYKFGHTKVFFKAGLLGLLEEMRDERLSRIITRI--QAQSRGVLSRMEFKKLLE 806
                                                                                                                                      KLPGHKRFSWGWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGKHNLS 555
                                                                                                                                                                  VMHQLRCNGVLEGIRICRKGEPNRILYGDERQRYRILNPAAIPEGQFIDSRKGAEKLLGS 748
                                                                                                                                                                                            ILNELQMEAT-EVEKLFGRALP------IRKLRMALAPHSNFLANHETIKYYVGS 495
                                                                                                                                                                                                                        247;
                            -----DALKTCTCLLKECRLELAKCISNPACAANVACLQTCNNRPDETECQIKCGDLFE 662
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MUSCLE PROTEIN;
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16.7%;
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                                                             ---AFMGVKNWPWMKLYFKIKPLLKSAETEKEMANMKE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      D -> H (IN REF. 3).
N -> K (IN REF. 3).
T -> N (IN REF. 3).
R -> K (IN REF. 3).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ALKYLATION (SH-1)
ALKYLATION (SH-2)
IRK -> VRR (IN REF
D -> H (IN REF. 3)
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Pred. No. 1.
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MLP1_YEAST
ID MLP1_Y
AC Q02455
DT 01-QCT
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DT 15-JUL
DE MYOSIN
GN MLP1 0
OS SACCHA
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                            01-JUN-1994 (REL. 29, LAST SEQUENCE UPDA 15-JUL-1998 (REL. 36, LAST ANNOTATION UP MYOSIN-LIKE PROTEIN MLP1. SACCHAROMYCES CERFYISIAE (BAKER'S YEAST)
EUKARYOTA; FUNGI; ASCOMYCOTA; HEMIASCOMYCETES; SACCHAROMYCETALES;
                                                                                                 MLP1_YEAST STANDARD;
Q02455;
Q102455;
Q1-QCT-1993 (REL. 27, CREATED)
Q1-JUN-1994 (REL. 29, LAST SEQ
Q15-JUL-1998 (REL. 36, LAST ANN
                                                                                                                                                                                                                                                                    1598 QTSLDAETRSRNEALRVKKKMEGDLNEMEIQLSHANRMAAEA 1639
                                                                                                                                                                                                                                                                                                           1382 -----KEEME-FLDEIKMEASEVEKLFGKA 1405
                                                                                                                                                                                                                                                                                                                                            1538 LELQSALEEAEASLEHEEGKILRAQLEFNQIKAEIERKLAEKDEEMEQAKRNHLRVVDSL 1597
                                                                                                                                                                                                                                                                                                                                                                                   1331 RIIVKEVEEIEEEVEKEVEKVGRTEMTLFQ------RLAEGFNELKODEENFVRELS-- 1382
                                                                                                                                                                                                                                                                                                                                                                                                                          1478 STELFKLKNAYEESLEHLETFKRENKNLQEEISDLTEQLGSTGKSIHELEKIRKQLEAEK 1537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1277 YTRSSVLPNSIIPELE-----KAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGE 1330
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1217 KFVQDPNQPGVLYNHDNEYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDAWDGYGGAVV 1276
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1157 FNISDENGKWYITSGLNPTFDAFDCQLHEFHTEGDNKLVGNISWRIKTLDSGFFTRSAVQ 1216
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1265 ETQRSVNDL-----TRQRAKLQTENGELSRQLDEKEALISQLTRG-----KLTYTQQL 1312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1222 SEFKLELDD----VTSNMEQIIKAKANLEKM-----CRT--LEDQMNEHRS-----KAE 1264
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1162 EMNKKREAEFQKMRRDLEEATLQHEATAAALRKKHADSVAELGEQIDNLQRVKQKLEKEK 1221
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           980 ITRKRINGTFLLKILPPIQSADLRTTGGRSSRPL---SAFRSGFSKGIFDIVPLPSKNEL 1036
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         920 SKEEMDVLDGLKMEATEVEKLFGRALPIRKLMAVATHCFTSPCHDRIRFFSSDDGIGRLG 979
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     858 E-----PPLVERLEKKVEEGERT-----IIKEVEEIEEEVEK------ 890
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             994 KEKKALQEAHQQALDDLQAEEDKVNTLTKAKVKLEQQV------DDLEGSLDQDK 1042
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                663 NSV-----VDEFNE------CAVSRK---KCVPRKSDVGDFPVPDPSVLVQKFD 702
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LQTCNNRPDETECQIKCGDLFENSVVDEFNECAVSRKKCVPRKSDLGEFPAPDPSVLVQN 1156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EDLKROLEEEVKAKNALAHALQSARHDCDLLREQYEEETEAKAELQRVLSK--ANSEVAQ 1370
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  QDPKYPGILYNHDNEYLLYQDDWYILSSKVENSPEDYIFVYYKGRNDAWDGYGGSVLYTR 822
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                                                                                                              SEQUENCE UPDATE)
                                                                                                                                                                       PRT; 1875 AA.
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447 EILNELOMEATEVEKLEGRÄLPIRKLR-MALAPHSNFLANHETIKYYVGSKLPGHKRFSW 505
                                 283 DSLNSEKQEF-SAEMSLKQRLVDLLESQLNAVKEELNSIRELNTAKVIADDSKKQTPENE
                                                                403 EEVEKEVEKVRDTEMTLFOR---LLEGFKELQQDEENFVREL------SKEEK 446
                                                                                                235 VILDIRNELNRLRNDFQMERTNNDVLKQKN-----NELSKSLQ--EKLL--EIKGLS 282
                                                                                                                               348 IIPNLQKAAKSVGRDF-----NNFITTDNSCGPEPPLVERLEKTAEEGEKLLIKEAVEIE 402
                                                                                                                                                                                              288 ALYNHDNEFLHYODDWYILSSQIENKPDDYIFVYYRGRNDAWDGYGGSVIYTRSPTLPES 347
                                                                                                                                                                                                                             149 DERLKEIELVRVENNRSNSBCKKLRSTIMDLETKOQGYITNDLNSRTELERKTQELTL-- 207
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DOMAIN
DOMAIN
                                                                                                                                                                                                                                                             242 DCQLHEFHM---END-----KLVGNLTWRIKTLDGGFFT----RSAVQTFVQDPDLPG 287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EMBL; L01992; G171959; -. EMBL; X73541; G450554; -. EMBL; Z28320; G486587; -. EMBL; S38173; S38173; S38173;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       modified and this statement is not removed. Usage by and for commercial entitles requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                            171 CQIKCGDLFENSVVD------QFNEC------AVSRKKCVPRKSDVGEFP 208
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way
                                                                                                                                                                                                                                                                                                                            209 VPDRNAV-----TEDAF 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SGD; L0001122; MLP1.
MYOSIN; HEPTAD REPBAT PATTERN; COILED COIL; DNA REPAIR.
                                                                                                                                                                                                                                                                                            89 IRENDKIRKERNDTFVKFESVENEKMKLSSELEFVKRKLDDLTEEKKETQSNQQRTLKIL 148
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          -1- CAUTION: REF.2 MISQUOTES THE GENE NAME AS "MPL1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  "The complete sequence of a 15,820 bp segment of Saccharomyces cerevisiae chromosome XI contains the UBI2 and MPL1 genes and three
                                                                                                                                                                                                                                                                                                                                                             30 CSLEQVKSFDGDVVKHLNDKLLQFNELKSENLKVTVSFDELKASSLKKIDGLKTEM-ENV 88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  new open reading frames.";
YEAST 9:1349-1354(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDILINE; 9440340.

BOU G., ESTEBAN P.F., BALADRON V., GONZALEZ G.A., CAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                KOELLING R., NGUYEN T., CHEN E.Y., BOTSTEIN D.;
"A new yeast gene with a myosin-like heptad repeat structure.";
MOL. GEN. GENET. 237:359-369(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SACCHAROMYCETACEAE; SACCHAROMYCES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STRAIN=S288C
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                                                                                                                                                                                                                                                                                                                                                                                                                                                               recer
                                                                                                                                                                  -----LQSNNDW--LEKELRSKNEQYL--SYRQKTD------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SIMILARITY: SOME, TO THE TPR ONCOGENE
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                                                                                                                                                                                                                                                                                                                                                                                                                                               252;
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          531
1834
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                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
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1866
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                                                                                                                                                                                                                                                                                                                                                                                                                                                    1.8%; Score 137.5;
17.5%; Pred. No. 3.6;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       218455 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                            240; Mismatches 525; Indels 421; Gaps
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COILED COIL (POTENTIAL).
COILED COIL (POTENTIAL).
R -> A (IN REF. 1).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                             DB 1; Length 1875;
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DMD_CHICK STANDARD; PRT; 3660 AA. p11533; CREATED) 01-0CT-1989 (REL 12, CREATED) 01-0CT-1989 (REL 12, LAST SEQUENCE UPDATE) 01-NOV-1995 (REI. 32, LAST ANNOTATION UPDATE)

3660 AA

DYSTROPHIN.

Db #	0	망	Qy	Db	Qy	ДĎ	Qy	망	Qy	Db	Qy	Дb	Qy	Db	Qy	Db	Qγ	Db	Qy	Дδ	Qу	Db	Qγ	В	Qy	망	Qy	DЪ	Qy	Db	Qy	망	VQ	Db
	DEENFVRELSKEEMEF	KENHSSIIQQHD	1290 ELEKAAKSIGRDESTEIRTDNTCGPEPALVERIEKTVEEGERIIVKEVEEIE 1341	1105 LSNSRIEDLSSONKLLYDQIQIYTAADKEVNNSTNGPGLNNILITLRRERDILDTKVT 1162	1242 WYILSKIENKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIP 1289	YWSQVKTLNLSRDQLENALKENEKSWSSQKESLLEQLD 11			NECAVSRKKCVPRKSDLGEFPAPDPSVLVQNFNISDFNGKWYITSGLNPTFDAFDC 118	,NNELDLQKKGMEKEKADFKKRISILQNNNKEVEAV 10	112	DEKTS 964	SRPLSAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKLVGVLACAFLIVPSADAVDA 10	, ,	IQSADLRTTG 1	827 DHHIKQLEEDNNSNIEWYQNKIEALKKDYESVITSVDSKQTDIEKLQYKVKSLEKEIE 885	VA 95	ELEDALSELK-KETSQK 8	TLFSKL 90	VETELLNIKEEQKLRVHLEKNLKQEL 7	, o	SKSDISIKLGKEKSSRILAEERFKLLSNTLDLTKAENDQLRKRFDYLQN 7	ı no	6	v 76	569 QSLQKIESETVNEAKEAIITLKSEKMDLESRIBELQKELEELKTSVPNEDASYSNVT 625	CVPRKSDVGD	QLQEKNAELLKVVRNLAD		459 KNQKLVECENDLQTLTKQRLDLCRQIQYLLITNSVSNDSKGPLRKEEIQFIQNIMQED 516	AIFILSVASKA 60	402 HLQNQIETFIVELEHKVPIINSFKERTDMLENELNNAALLLEHTSNEKNAKVKELNA 458	506 GWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGKHNLSPAHSINQNVP 565	342 DILKELQLTKEKLAQCEKECLRLSSITDEADEDNENLSAKSSSDFIFIKKQLIKERRTKE 401

DMD_CHICK RESULT

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Best Local 9
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LEMAIRE C., HEILIG R., MANDEL J.L.;
"The chicken dystrophin cDNA: striking conservation of the C-terminal coding and 3' untranslated regions between man and chicken.";
EMBO J. 7:4157-4:62(1988).
-i- FUNCTION: MAY PLAY A ROLE IN ANCHORING THE CYTOSKELETON TO THE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MEDLINE; 8908331.
LEMAIRE C., HEILIG R., MANDEL J.L.;
"Nucleotide sequence of chicken dystrophin cDNA.";
NUCLEIC ACIDS RES. 16:11815-11815(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EUKARYOTA; METAZOA; CHÓRDATA; VERTEBRATA; ARCHOSAURIA; AVES;
NEOGNATHAE; GALLIFORMES; PHASIANIDAE; PHASIANINAE; GALLUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GALLUS GALLUS (CHICKEN)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -!- SIMILARITY: THE ACTIN-BINDING DOMAIN IS OF A TYPE FOUND IN MANY ACTIN-BINDING PROTEINS (SUCH AS ACTININ, DYSTROPHIN, FIMBRIN, ABP-120, ABP-180, OR BETA-FODRIN).
-!- SIMILARITY: CONTAINS 1 WW DOMAIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MEDLINE; 89210800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                             PROSITE; PS00019; ACTININ_1; 1.
PROSITE; PS00020; ACTININ_2; 1.
PROSITE; PS01159; WW_DOMAIN_1; 1.
PROSITE; PS50020; WW_DOMAIN_2; 1.
PRAM; PF00307; ACTININ-binding; 1.
PFAM; PF00397; WW_TSDD_WWP; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TISSUE-MUSCLE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                        PIR; S020 PROSITE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EMBL; X13369; G63370; -.
                                                                                                                                                                                                                                                                                                                                                  PFAM; PF00435; spectrin; 22. PFAM; PF00569; ZZ; 1.
1983 TTFVMTESMTVETTYVPSTYLAEI-LQLLQALSEVEERLNSPVLQAKD------C 2030
                                                                                                                                                                                                                                                  DOMAIN
                                                                                                                                                                                                                                                                  DOMAIN
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                                                                                                                                                                                                                                                                                            DOMAIN
                                                                                                                                                                                                                                                                                                            REPEAT
                                                                                                                                                                                                                                                                                                                                        HSSP;
                                                         1923 KKKEDINAVNRJAERISKDGAAKAVEPTIVQISKRWRDFESKFAQFRRINYAQIQTVIED 1982
                                                                                                                                                                                            SEQUENCE
                                                                                                                                                                                                        VARIANT
                                                                                                                                                                                                                        VARIANT
                                                                                                                                                                                                                                      VARIANT
                             116 TFVIVPRVDAVDALKTCACLLKECRIELAKCIANPSCAANVACLQTCNNRPDETECQIKC 175
                                                                                     71 KDKSQICSIDTSFEEIQRFDLKRGM--TLI-LEKQWRQF-----IQLAIVLVC 115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PLASMA MEMBRANE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          S02041;
                                                                                                                                                                                                                                                                                                                                         Q01082;
                                                                                                                      245;
                                                                                                                                    Similarity
                                                                                                                                                                                                                                                                                                                        PROTEIN; ACTIN-BINDING; CALCIUM-BINDING; CYTOSKELETON;
                                                                                                                                                                                                           1
300
3052
3086
1171
1859
1885
                                                                                                                                                                                             3660 AA;
                                                                                                                      Conservative 196;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          S02041
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3000
3085
3357
1171
                                                                                                                                                                                                           1869
1885
                                                                                                                    1.8%; Score 135; DB 1; Length 3660;
17.6%; Pred. No. 12;
rative 196; Mismatches 482; Indels 472; Gaps
                                                                                                                                                                                               422874 MW;
                                                                                                                                                                                                           К -> н.
                                                                                                                                                                                                                                       CYS-RICH.
MISSING.
                                                                                                                                                                                                                                                                     26 SPECTRIN-LIKE REPEATS. WW DOMAIN.
                                                                                                                                                                                                                                                                                                 ACTIN-BINDING
                                                                                                                                                                                                AF61A205 CRC32;
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1	
1/ RSGFSKGIFDIVPLPSKNELKELTAPLLLKLVGVLACAFLIVPSADA 1063 57 RLFLADOPVEGLEKYVPEPPRDISDEFERANTTUKT TOON	Db 286
THTS	
EDAVLLQERLDNMNFRWSELRKKS	N
TTANVLQDA	Db 2707 Qy 923
82 EIEEEVEKYRDKEVTLPSKLFEGFKELORDFENEIBBIGEN 0	
47TFIKTDNTCGPE	Qy 84 Db 265
QAKAKLESWKBISYTVEALKKONSELKOFSKEIROWQMNIEGVNDVALKPVRDYSA 2	N
03 YYKGRNDAWDGYGG	Оу 81
45 IRTPDGGFFTRSAVQKF-VQDPKYPGILYNHDNE-YLLYQDDWYILSSKVENSPEDYIFV 802 802 STSNQEARTIITDRIEKIQSQWDDVHGYLQNRRQQLHENQKDSTOWLEAKGEAFONTE 750	Oy 7 Db 25
96	N
85 DVGDFPVPDPSVLVQKFDMKDFSGKWFITRGLNPTFDAFDCOLHEFHTEENKIVCNISWB 744	Qy 6
57 EMPSSV	Db 24
ACAANVACLQTCNNRPDETECOTKCGDIFFNSOVDEFNEG	
08 AINHLILOLKEK-PTEGEPALTISEGUTT-SCOTTAVALT	N
	Qy
378 - VLSKGCHLYKEKP	2
AA	
KLFGRALPIRKLRMA	<u> </u>
IEEEVEKEVEKVRDTEMTLFQRLLEGFKELQQDEENFVRELSKEEKEILNELQMEATEVE	
2261 EELLPHKGILKRLNETGGTTLGSASLNPERKHKLESTLKEASRRLLKVSRD 2311	Db 2
SPTLPESIIPNLQKAAKSVGRDENNFITTDNSCGPEPPTVERIERTERTAFECETTITTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT	Qy
201 QLVEKRKRIEEEKNILSEFORDINKIJIMIEETTENVIJATUT TIRGKNUAMDGYGGSVIYTR 3	Ν
NEFLHYODDWYILSSOIENKEDDDVTEVVVDGDWTAVTOWOODLUNTRWQEICR 2	Qy
144 TKOFLOELQDGIGROOTVVKTLNVTGEETTFOGSAADANVIKEDICNI NITTEGETTE	Db 2
EFERNISKAQIBAGDVGHVK 21	Qy
SOWEKVNKMYRDRQAREDKSKEKWRLFHCEMKSENPWITTETDEKKI SDAOTDAGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG	
TSGLNPTFDAFDOOTBEEUMENDUT	Qy
LOGHIDITHGKKHBALOGAHDDHHANIFO	Db 2
)	Qy

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RA FEGHALI R., LEINWAND L.A.;

RY "Molecular genetic characterization of a developmentally regulated myosin heavy chain.";

J. CELL BIOL. 108:1791-1797(1989).

CC -!- FUNCTION: MUSCLE CONTRACTION.

CC -!- SUBUNIT: MUSCLE MYOSIN IS A HEXAMERIC PROTEIN THAT CONSISTS OF 2 HEAVY CHAIN SUBUNITS (MHC), 2 ALRALI LIGHT CHAIN SUBUNITS (MLC)

CC -!- SUBCELULAR LOCATION: THICK FILAMENTS OF THE MYOFIBRILS.

CC -!- SUBCELULAR LOCATION: THICK FILAMENTS OF THE MYOFIBRILS.

CC -!- DOMAIN: THE RODLIKE TAIL SEQUENCE IS HIGHLY REPETITIVE, SHOWING CYCLES OF A 28-RESIDUE REPEAT PATTERN COMPOSED OF 4 HEPTAPEPTIDES, COMPANANCIENT THE CONTROL OF THE COLLED COLLS.

CC -!- PTM: TWO CYSTEINE RESIDUES IN THE SI DOMAIN ARE SELECTIVELY ALKYLATED AND ARE REQUIRED FOR MYOSIN ATPASE ACTIVITY.

CC -!- EACH MYOSIN HEAVY CHAIN CAN BE SPLIT INTO 1 LIGHT MEROMYOSIN (LMM)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT 10
MYSP_HUMAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Db
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                                                                                                                                                                                                                                                                            SEQUENCE OF 860-1937 FROM N.A. MEDLINE; 89234168.
                                                                                                                                                                                                                                                                                                                                                 myosin heavy chains.
                                                                                                                                                                                                                                                                                                                                 EUR. J. BIOCHEM.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MYSP_HUMAN STANDARD; PRT; 1937 AA. P13535; Q14910; O1-JAN-1990 (REL. 13, CREATED) 15-JUL-1998 (REL. 36, LAST SEQUENCE UPDATE) 15-JUL-1998 (REL. 36, LAST ANNOTATION UPDATE) MYOSIN HEAVY CHAIN, PERINATAL SKELETAL MUSCLE.
                                                                                                                                                                                                                                                                                                                                              "Identification of three developmentally controlled isoforms of human
                                                                                                                                                                                                                                                                                                                                                                                        ARNOLD H.H.
                                                                                                                                                                                                                                                                                                                                                                                                                   MEDLINE; 90235862
                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE OF 502-1937 FROM N.A. TISSUE=SKELETAL MUSCLE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      JULLIAN E.H., KELLY A.M., POMPIDOU A.J., HOFFMAN R., SCHIAFFINO S., STEDMAN H.H., RUBINSTEIN N.A.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            KARSCH-MIZRACHI I., FEGHALI R., SHOWS T.B. JR., LEINWAND L.A.; "Generation of a full-length human perinatal myosin heavy-chain-encoding cDNA."; GENE 89:289-294(1990).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                "Characterization of a human perinatal myosin heavy-chain transcript.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE FROM N.A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MEDLINE; 95324556
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          HOMO SAPIENS (HUMAN).
EUKARYOTA; METAZOA, CHORDATA; VERTEBRATA; MAMMALIA; EUTHERIA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TISSUE-SKELETAL MUSCLE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MEDLINE; 90323631.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1220 QDPNQPGVLYNHDNE 1234
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2960 VGDLLIDSLQDHLEKVKVYRAEMVPLKEKVHQVNELAHRFAP-PDIQLSPYTLSCLEDLN 3018
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                              J. BIOCHEM. 230:1001-1006(1995).
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                                                                                                                                                                                                                     TRANSMEMBRANE; GPI-ANCHOR
                                                                                                                                                                                                                                                                           PIR; A25120; SAZQK1.
                                                                                                                                                                                                                                                                                          EMBL; x03371; G929798; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                   -!- PTM: MEROZÓITE SURFACE ANTIGEN CONTAIN THE SEQUENCE OF 83 KD, KD AND 19 KD ANTIGENS WHICH ARE THE MAJOR SURFACE ANTIGENS OF MEROZOITES. THE MATURATION TAKE PLACE DURING SCHIZONT.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PAN W., TOLLE R., BUJAKU H.;
SUBMITTED (JUN-1995) TO EMBL/GENBANK/DDBJ DATA BANKS.
-!- SUBCELLULAR LOCATION: ATTACHED TO THE MEMBRANE BY A GPI-ANCHOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REVISIONS,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "Polymorphism of the precursor for the major surface antigens of Plasmodium falciparum merozoites: studies at the genetic level.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   13-AUG-1987 (REL. 05, CREATED)
01-FEB-1996 (REL. 33, LAST SEQUENCE UPDATE)
01-OCT-1995 (REL. 34, LAST ANNOTATION UPDATE)
MEROZOITE SURFACE PROTEIN 1 PRECURSOR (MEROZOITE SURFACE ANTIGENS)
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EUKARYOTA; ALVEOLATA; APICOMPLEXA; HAEMOSPORIDA; PLASMODIUM.
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STUNNENBERG H., BUJARD H.;
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                                                                                                                                                                                                                     PF00008; EGF; 1.
IA; MEROZOITE; POLYPROTEIN; REPEAT; SIGNAL; GLYCOPROTEIN;
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MEROZOITE SURFACE PROTEIN 1.

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                                                     872 KV----STSVKTLSSSSMQPLSLTPQDKPEVSANDDTSHSTNLNNSLKLFENTLSLGKNK 927
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                                                                                                                         816 LLFNIQNNIFVMY----SMFDSLNNSLSQLFMEIYEKEMVCNLYKLKDNDKIKNLLEEAK 871
                                                                                                                                                           780 H------;-----KY--ILVSHSTMNEKILKO---YKITKEEESKLSSCDPLD 815
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                                                                                                                                                                                                                                                                                   748 TPPAPVNNKTENVSKLDYLE----
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                                                                                                                                                                                                                                                                                                                                                                         652 ECQI-----KCGDLFENSVVDEFNECAVSRKKCVPRKSDVGDFPVPDPSVLVQ-- 700
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01-FEB-1996 (REL. 33, LAST SEQUENCE UPDATE)
01-FEB-1996 (REL. 33, LAST ANNOTATION UPDATE)
MEROZOITE SURFACE PROTEIN 1 PRECURSOR (MEROZOITE SURFACE ANTIGENS)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PLASMODIUM FALCIPARUM (ISOLATE WELLCOME).
EUKARYOTA; ALVEOLATA; APICOMPLEXA; HAEMOSPORIDA; PLASMODIUM
use by non-profit institute. There are no restrictions on its modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                   "Primary structure of the precursor to the three major surface antigens of Plasmodium falciparum merozoites."; NATURE 317:270-273(1985).
                                                                                                                                                                                                                                                                                                                                                                                                                           HOLDER A.A., LOCKYER M.J., ODINK K.G., NICHOLLS S.C., HILLMAN Y., DAVEY L.S.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A. MEDLINE; 86014355.
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                                                                                                                                                                                                                                                                                                                                                                                                               FREEMAN R.R.;
                                                                                              This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its
                                                                                                                                                                                                                                                      SUBMITTED (MAR-1991) TO EMBL/GENBANK/DDBJ DATA BANKS.
-!- SUBCELLULAR LOCATION: ATTACHED TO THE MEMBRANE BY A GPI-ANCHOR
                                                                                                                                                                                                                                                                                                                  REVISIONS
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MEATEVEKLEGRALPIRKLMAVATHCETSPCHDRIRFFSSDDGIGRLGITRKRINGTFLL 991
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             E--NFKVLSKLEGKLKDNLN---LEKKKLSYLSSGLHHLIA-ELKEVIKNKNY----- 1158
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TECQIKCGDLFENSVVDEFNECAVSRKKCVPRKSDLGEFPAPDPSVLVQNFNISDFNGKW 1166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     YITSGLNPTFDAFDCQLHEFHTEGDNKLVGNISWRIKTLDSGFFTRSAVQKFVQD----
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            -PNQPGVLYNHDNEYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDA-WDGYGGAVVYTR 1279
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                                                                                                                                                                           PTM: MEROZOITE SURFACE ANTIGEN CONTAIN THE SEQUENCE OF 83 KD, KD AND 19 KD ANTIGENS WHICH ARE THE MAJOR SURFACE ANTIGENS OF MEROZOITES. THE MATURATION TAKE PLACE DURING SCHIZONT.
                                                                                                                                                                                                                                        (POTENTIAL).
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                                                                                                                                                   706 EGEITGOATTKPGQQAGSALEG---DSVQAQAQEQKQAQP------PVPVPVPEAKAQVP 756
746 RTPDGGFFTRSAVQKFVQDPKYPGILYNHD--NEYLLYQDDWYTLSSKVEN-----SPED 798
                                                     757 TPPAPVNNKTENVSKLDYLE---
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18.0%; Pred. No. 4.7;
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MYSB_MESAU
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                                                                                                                                SEQUENCE FROM N.A.
STRAIN-F1B; TISSUE-LIVER;
MEDLINE; 95115033.
WANG R., SOLE M.J., CUKERMAN E., LIEW C.
"Sequence of cDNA encoding the Syrian hamster cardiac beta-myosin
                               JANDRESKI M.A.,
                                                           SEQUENCE OF $62-1935 FROM N.A.
                                                                                      "Characterization and nucleotide sequence of the cardiac alpha-myosin heavy chain gene from Syrian hamster.";
J. MOL. CELL. CARDIOL. 26:1155-1165(1994).
                                                                                                                                                                                                                                                                                              P13540; Q60540;
01-JAN-1990 (REL. 13, CREATED)
15-JUL-1998 (REL. 36, LAST SEQUENCE UPDATE)
15-DEC-1998 (REL. 37, LAST ANNOTATION UPDATE)
                                                                                                                                                                                                                                     MESOCRICETUS AURATUS (GOLDEN HAMSTER)
EUKARYOTA; METAZOA; CHORDATA; VERTEBR
                                                                                                                                                                                                                RODENTIA; SCIUROGNATHI; MURIDAE; CRICETINAE; MESOCRICETUS
                                                                                                                                                                                                                                                                                 MYOSIN HEAVY CHAIN, CARDIAC MUSCLE BETA ISOFORM.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             881 KV----STSVKTLSSSSMQPLSLTPQDKPEVSANDDTSHSTNLNNSLKLFENTLSLGKNK 936
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           799 YIF-------VYYKGRNDAWDGYGGSV------LYTRSAVL------PESIIPELQTAAQ 839
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    - PNOPGVLYNHDNEYLHYODDWYILSSKIENKPEDYIFVYYRGRNDA-WDGYGGAVVYTR 1279
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    E--NFKVLSKLEGKLKDNIN---LEKKKLSYLSSGLHHLIA-ELKEVIKNKNY------
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                             SOLE M.J.,
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                           LIEW C.-C.;
                                                                                                                                                                                                                              VERTEBRATA; MAMMALIA; EUTHERIA;
                                                                                                                                                                                                                                                                                                                                                                       PRT;
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Matches
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304 YILSSQIENKPDDYIFVYYRGRND----AWDGYGGSVIYTRSPTLPESIIPNLQKAA-KS 358
                                      507 WTFIDEGMDLQACIDLIEKPMRIMSILEEECMEPKATDMTEKAKLYDNHLGKSNNFQKPR 566
                                                                                                                                                                   238 ------FDAFDCQLHE---FHMENDKLVGNLTWRIKTLDGGFFTRSAVQ 277
                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE
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                                                                                                                                                                                                           390 NSADLLKGMCHPRVKVGNEYVTKGQNVQQVSYAIGALAKSVYEKMFN--WMVTR-INATL 446
                                                                                                                                                                                                                                                    188 NECAVSRKKCVPRKSDVGEFPVPDRN------AVVQNFNMKDFSGKWYITSGLNPT- 238
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-!- FUNCTION: MUSCLE CONTRACTION.
-!- SUBUNIT: MUSCLE MYOSIN IS A HEXAMERIC PROTEIN THAT CONSISTS OF 2
HEAVY CHAIN SUBUNITS (MHC), 2 ALKALI LIGHT CHAIN SUBUNITS (MLC)
-!- SUBCELLULAR LOCATION: THICK FILAMENTS OF THE MYOFIBRILS.
-!- SUBCELLULAR LOCATION: THICK FILAMENTS OF THE MYOFIBRILS.
-!- DOMAIN: THE RODLIKE TAIL SEQUENCE IS HIGHLY REPETITIVE, SHOWING CYCLES OF A 28-RESIDUE REPEAT PATTERN COMPOSED OF 4 HEPTAPEPTIDES,
-!- EACH MYOSIN HEAVY CHAIN CAN BE SPLIT INTO 1 LIGHT MEROMYOSIN (LMM)
-- AND 1 HEAVY MEROMYOSIN (HMM). IT CAN LATER BE SPLIT FURTHER INTO 2 GLOBULAR SUBERAGMENTS (S1) AND 1 ROD-SHAPED SUBFRAGMENT (S2).
-!- SIMILARITY: BELONGS TO THE MYOSIN HEAVY CHAIN FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CONFLICT
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251,
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MYOSIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way
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NUCLEIC ACIDS RES.
                                                                                                                          ETKQPRQYFIGVLDIAGFEIFDFNSFEQLCINFTNEKLQQFFNHHMFVLEQEEYKKEGIE 506
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     P08799;
                                                                                                                                                                                                                                                                                                                                      Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MUSCLE PROTEIN; COILED COIL; THICK FILAMENT; ACTIN-BINDING; METHYLATION; ALKYLATION; MULTIGENE FAMILY.
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1095
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1327
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779 801
839 1934
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654 676
756 770
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                                                                                 -----DPDLPGALY-NHDNEFLHYQDDW 303
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T -> TE (IN REF. 2).

E -> Q (IN REF. 2).

E -> Q (IN REF. 2).

D -> Y (IN REF. 2).

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C -> R (IN REF. 2).

T -> A (IN REF. 2).

D -> V (IN REF. 2).

C -> R (IN REF. 2).

T -> A (IN REF. 2).

C -> R (IN REF. 2).

M -> Y (IN REF. 2).

M -> Y (IN REF. 2).

M -> K (IN REF. 2).
                                                                                                                                                                                                                                                                                                                             Score 133.5; pred. No. 6.3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         METHYLATION (TRI-) (POTENTIAL).
ALKYLATION (SH-1) (POTENTIAL).
ALKYLATION (SH-2) (POTENTIAL).
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                                                                                                                                                                                                                                                                                                                                                                                                              CRC32;
                                                                                                                                                                                                                                                                                                                                          DB 1; Length 1934;
                                                                                                                                                                                                                                                                                               525; Indels 493;
                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                               63;
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1278	1219 VQDPNQPGVLYNHDNEYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDAWDGYGGAVVYT	Qy
1439	1402AVEAVNAKCSSLEKTKHRLQNEIEDLMVDVERSNAAAA	DЪ
1218	CQLHEFHTEGDNKLVGNISWRIKTLDSGFFTRSAVQKF	Qy
1402		Дb
1158	EFPAPDPSVLVQNFN	Qy
1355	:CDLLREQYEEETEAKAE	DЬ
1110	1053 CAFLIVPSADAVDALKTCACLLKGCRIELAKCIANPACAANVACLQTCNNRPDETECQ	Qy
1319	RQLDEKEALISQLTRGKLTYTQQLEDLKRQL	В
1052	IFDIVPLPSKNELKELTAPLLLKLVGVLA	Qy
1273		ᅡ
995	MAVATHCFTSPCHDRIRFFSSDDGIGRLGITRKRINGTFLLKILP	QУ
1232	1177 LEEATLQHEATAAALRKKHADSVAELGEQIDNLQRVKQKLEKEKSEFKLELDDVTS	В
935	GLKMEAT	Qy
1176	EEL-EAERTARAKVEKLRSDLSRELEEISERLEEAGGATSVQIEMNKKREAEFQKMRRD	ğ
890	KVEEGERTIIKEVEEIEEEVEK	Qy
1117	: : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : :	DЬ
865	VLPESIIPELQTAAQKVGRDFNTFIKTDNTCGPEPPLVERL	Qy
1063	1004 QALDDIQABEDKVNTLTKSKVKLEQQVDDLEGSLEQEKKVRMDLERAKRKLEGDLKLTQE	В
823	IFVYYKGRNDAWDGYGGSVLYTRS	Qy
1003	EIIAKLTKEKKALQEAHQ	Db
773	PDGGFFTRSAVQKFVQDPKYPGILYN	Qy
968	921 MTERLEDEEEMNAELTAKKRKLEDECSELKRDIDDLELTLAKVEKDK	Db
713	VPRKSDVGDFPVPDPSVLVQKFDMKDFSGKWFIT	Qy
920	ERCDQLIKNKIQLEAKVKE	Дb
668	VDE	Qy
864	825 NWPWMKLYFKIKPLLKSAETEKEMATMK-EEFGRVKDALEK	Дb
613	PEDVALMVWEKWGQFAKTAIVAIFILSVASKADAVDALKT	Qy
824	: : QWNI-RAFMGVK	멍
572	SPAHSINQNVPKGNSGCK	Qy
767	708 FPNRILYGDFRQRYRILNPAAIPEGQFIDSRKGAEKLLSSLDIDHNQYKFGHTKVFFKAG	Db
515	YYVGSKLPGHKRFSWGWEDYFGSIV	Qy
707	665HPHFVRCIIPNETKSPGVMDNPLVMHQLRCNGVLEGIRICRKG	Db
466	EKLFGRA	Qy
665	616 LSNLFANYAGADAP-VDKGKGKAKKGSSFQTVSVLHRENLNKLMTNLRST- (Db
416	GRDFNNFITTDNSCGPEPPLVERLEKTAEEGEKLLIKEAVEIEEEVEKEVEKVRDTE	Qy
615	567 NVKGKQEAHFSLVHYAGTVDYNILGWLQKNKDPLNETVVGLYQKSSLKL (Дb

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                                                                                                                                                                                                                                                                             NOCHI S.K., SCHINVO G., MOCK M., MONTECUCCO C.;

"Zinc content of the Bacillus anthracis lethal factor.";

"Zinc content of the Bacillus anthracis lethal factor.";

L FEMS MICROBIOL. LETT. 124.343-348(1994).

C -!- FUNCTION: ONE OF THE THREE PROTEINS COMPOSING THE ANTHRAX TOXIN,

AGENT WHICH INFECTS MANY MAMMALIAN SPECIES AND THAT MAY CANSE

C DEATH. LF IS THOUGHT TO BE A LETHAL FACTOR THAT, WHEN ASSOCIATED

C WITH PA, CAUSES DEATH. LF IS NOT TOXIC BY ITSELF. PA IS THOUGHT TO

BIND TO RECEPTORS OF SENSITIVE BUKARYOTIC CELLS, THEREBY

FACILITATING THE INTERNALIZATION OF LF OR EF.

C -!- SUBUNIT: SECRETED ANTHRAX TOXIN IS COMPOSED OF THREE DISTINCT

PROTEINS, A PROTECTIVE ANTICEN (PA), A LETHAL FACTOR (LF) AND AN

C EDEMA FACTOR (EF). NONE OF THESE IS TOXIC BY ITSELF.

C -!- SUBCELLULAR LOCATION: SECRETED.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SULT 14
BACAN
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EMBL; M30210; G143142; -.
PIR: JQ0032; JQ0032.
PROSITE; PS00142; ZINC_PROTI
HYDROLASE; METAL.:OPROTEASE;
                                                                                                                                                              This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                "Nucleotide sequence and analysis from Bacillus anthracis."; GENE 81:45-54(19:9).
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                                                                                                              use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MEDLINE; 90034185.
BRAGG T.S., ROBERTSON D.L.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               BACIERIA; FIRMICUTES; BACILLUS/CLOSTRIDIUM GROUP; BACILLACEAE; BACILLUS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               BACILLUS ANTHRACIS. PLASMID PXO1.
                                                                                                                                                                                                                                                   -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A.
                                                                                                 or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MEDLINE; 95154669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SUBMITTED (APR-1990) TO EMBL/GENBANK/DDBJ DATA BANKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A., AND
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                                                                                                                                                                                                                                                               AND LF
                                                                                                                                                                                                                                                  SIMILARITY: BELONGS
                                                                                                                                                                                                                                  METALLOPROTEASE).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ALDKKQ----RNFDKILAEWKQKYEESQSELESSQKE---
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RSSVLPNSIIFELE-----KAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGERI 1332
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ZINC_PROTEASE;

ZINC;

1. ; TOXIN; SIGNAL; REPEAT; PLASMID.

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             В
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matches 139;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         METAL
ACT_SITE
METAL
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                                                                                                                                                                                                                                                                                                                                       1165
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DOMAIN
DOMAIN
                                                                                       1380 ----LSKEEME-----FLDEIKMEASEV 1398
                                                                                                                                                                                                                                                                                                                                                                                                  1110
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CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE
                                                            729
                                                                                                                    670 PNIAEQYTHQDEIYEQVHSKGLYVPESRSILLHGPSKGV-ELRNDSEGFIHEFGHAVDDY
                                                                                                                                                                                                                                               567
                                                                                                                                                                                                                                                                                                                                                                                                                              484
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         430
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    390
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     879
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              330
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   733 EENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHD---NEYLLYQDDWY--I 787
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Local Similarity
                                                                                                                                                                                                                                                                                                          AGYLENG----
                                                                                                                                                                                                            SVLPNSIIPELEKAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGE-RIIVKEV--
                                                                                                                                                                                                                                                                                                                                                                                                                           ------GADLVDST----
                                                           AGYLLDKNOSDLVTNSKKFIDIFKEEGSNL 758
                                                                                                                                                                             FNVHNRYASNIVESAYLILNEWKNNIQSD------LIKKVTNYLVDGNGRFVFTDITL
                                                                                                                                                                                                                                          ----IIKQSEKEYIRI-DAKVVPKSKIDTKIQE----AQLNINQEWNKALGLPKYTKLIT
                                                                                                                                                                                                                                                                       NQPGVLYNHDNEYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDAWDGYGGAVVYTR--S
                                                                                                                                                                                                                                                                                                                                  KWYITSGLNPTFDAFDCQLHEFHTEGDNKLV--GNISWRIKTLDSGFFTRSAVQKFVQDP 1222
                                                                                                                                                                                                                                                                                                                                                                                             QIKCGDLFENSVVDE--FNECAVSRKKCVPRK---SDLGEFPAPDPSVLVQNFNISDFNG
                                                                                                                                                                                                                                                                                                                                                                                                                                                      VLACAFLIVPSADAVDALKTCACLLKGCRIELAKCIANPACAANVACLQTCNNRPDETEC 1109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GLIDSPSINLDVRKQYKRDIQNIDALLHQSIGSTLYNKIYLYENMNINNLTATL-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GRSSRPL-----SAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKLVG 1049
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MAVATHCFTSPCHDRIRFFSSDDGIGRLGITRKRINGTFLLKILPPIQSAD----LRTTG 1006
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APEAFNYMDKFNEQEINLSLEELKDQRMLSRYEKWEKIKQHYQHWSDSLSEEGRGLLKKL .329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               IKNASDSDGQDLLFTNQLKEHPTDFSVEFLEQNSNEVQEVFAKAFAYYIEPQHRDVLQLY 269
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            L---VIQSSEDYVENTEKALN-------VYYEIGKILSRDILSKINQPYQKFLDVLNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EMYKAIGG---KIYIVDGDITKHISLEALSEDKKKIKDIYGKDALLHEHYVYAKEGYEPV 161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           QIPIEPKKDDIIHSLSQEEKELLKRIQIDSSDFLSTEEKEFLKKLQIDIRDSLSEEEKEL 389
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ---LQRDEENFLRELSKEEMDVLDGLKMEATEV----EKLFGRALPI--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LSSKVENSPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDFNT 847
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -----EVEEIEEEVEKVRDKEVTLFSKLFEGFKE----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              809
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative 117;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1
34
34
300
719
720
723
                                                                                                                                                                                                                                                                                                                                                                DNTKINRGIFNEFKKNFKYSISSNYMIVDINERPALDNERLKWRIQLSPDTR 543
                                                                                                                                                 --EEIEEEVEKEVEKVGRTEMTLFQRLAEGFNELKQDEENFVRE-------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ----NRIQVDSSNP-----LSEK--EKEFLKKLKLDIQPYDINQRLQDTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   33
809
293
420
719
720
723
93786
                                                                                                                                                                                                                                                                                                       -----KLILQRNIGLEIKDVQ-----
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17.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ----PEPPLVERLEKKVEEGERTIIK----------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 132; DB Pred. No. 2.4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LETHAL FACTOR.

PA-BINDING REGION (POTENTIAL).

REPEATS.

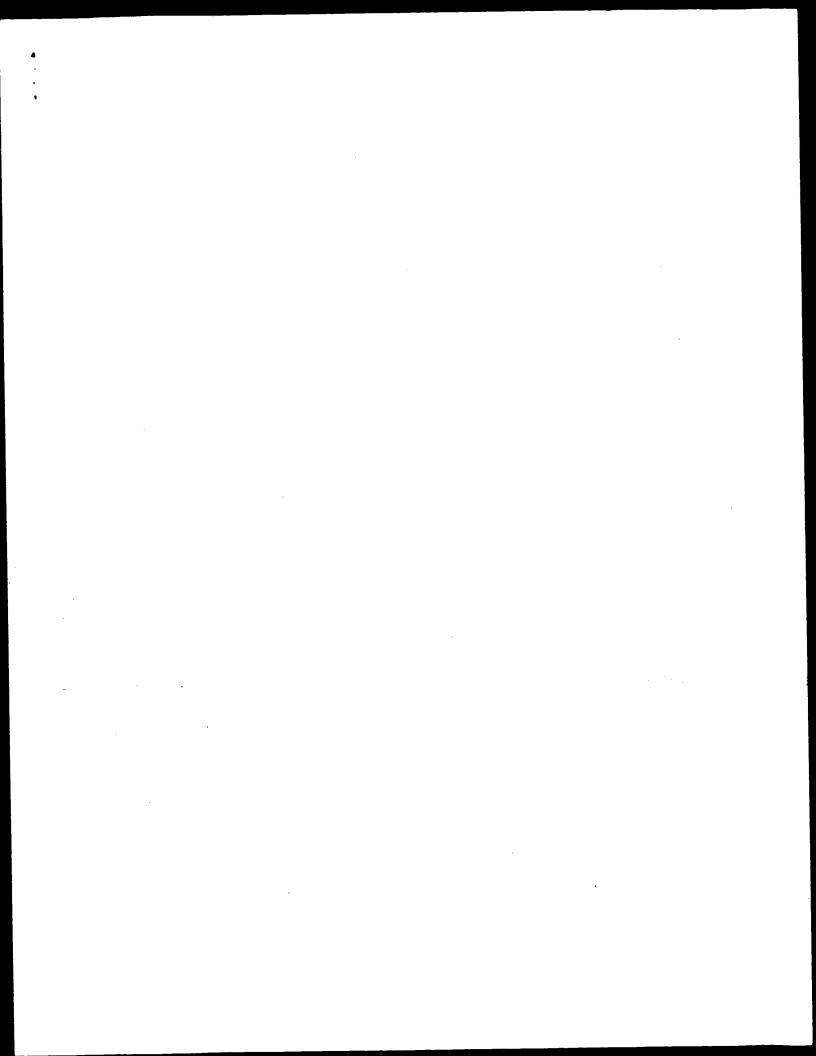
ZINC (CATALYTIC) (POTENTIAL).

POTENTIAL.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           INC (CATALYTIC) (POTENTIAL)
D81B6EBB CRC32;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Mismatches 254;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 809,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels 300;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         -RKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                             1338
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EMBL; Z47047; G763197; -. EMBL; Z38059; G557774; -. PIR; S48385; S48385. HYPOTHETICAL PROTEIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              use by non-profit institute. There are no restrictions on modified and this statement is not removed. Usage by and for or a license arroom.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              BARRELL B.G., BADCOCK K., BANKIER A.T., BOWMAN S., BROWN D., CHURCHER C.M., CONNOR R., COPSEY T., DEAR S., DEVLIN K., FRASER GENTLES S., HAMINN N., HORSHELL T.S., HUNT S., JAGELS K., JONES LOUIS E., LYE G., MOULE S., MOULE T., ODELL C., PEARSON D., RAJANDREAM M.A., RILES L., ROWLEY N., SKELTON J., SMITH V., WALSH S.V., WHITEHEAD S.; SUBMITTED (DEC-1994) TO EMBL/GENBANK/DDBJ DATA BANKS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          01-FEB-1995 (REL. 31, CREATED)
01-FEB-1995 (REL. 31, LAST SEQUENCE UPDATE)
01-FEB-1995 (REL. 31, LAST ANNOTATION UPDATE)
HYPOTHETICAL 195.1 KD PROTEIN IN DNA43-UBII I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SACCHAROMYCES CEREVISIAE (BAKER'S YEAST).
EUKARYOTA; FUNGI; ASCOMYCOTA; HEMIASCOMYCETES;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        YIO9_YEAST
P40457;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    entities requires a license agreement (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STRAIN=S288C / AB972;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SACCHAROMYCETACEAE; SACCHAROMYCES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A
785 WYILSSKVENSPEDYIFVYYKGRNDAW---
                                      988
                                                                                                                                           674 VSRKKCVPRKSDVGDFPVPDPSVLVQKFDMKDFSGKWFITRG-----LNPT----FDAFD
                                                                                                                                                                                      807
                                                                                                                                                                                                                         614
                                                                                                                                                                                                                                                              748
                                                                                                                                                                                                                                                                                                                                                                                                                                                  474
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     595
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        432
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       536 LADKLENYEGKQDKTLQKVENQTIKEAKDAIIELE-NINAKMETRINILLRERDSYKLLA 594
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        379 LVERLE-----KTAEEGEKLLIKEAVEIEEEVEKEVEKVRDTEMTLFQRLLEGFKELQ 431
                                      VQLKDANS - -
                                                                     CQLHEFHTEENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLYQDD
                                                                                                        TTIEKL---SSEIENL---DKELRKTKFQYK-----FLDQNSDASTLEPTLRKELEQIQ
                                                                                                                                                                                      C----KDSQLKWAQ-----
                                                                                                                                                                                                                   CTCLLKECRLELAKCISNPACAANVACLQTCNNRPDETECQIKCGDLFENSVVDEFNECA
                                                                                                                                                                                                                                                          KKELQMRLKESEISHNENKMDFSSKEGQY-KAKIKELENNLERLRSDLQSKIQEIESIRS
                                                                                                                                                                                                                                                                                                                                                                      RRIPRYFR-KSPRICCGLDSRGLQLFSHGKHNLSPAHSINQN-VPKGNS-----GCKF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    QDEENFVR-----ELSKEEKEILNELQMEATEVEKLFGRALPIRKLR-------
                                                                                                                                                                                                                                                                                             PKDVALMVWE------KWGQFAKTAIVAI-----FILSVASKADAVDALKT
                                                                                                                                                                                                                                                                                                                                   --VPSYTHVEKERASTELSQSRIKIKSL-EYEISKLKKETASFIPTKESLTRDFEQCCKE
                                                                                                                                                                                                                                                                                                                                                                                                         KKKTTLEDFENFKGLAKEKERMLEEAIDHL---KAELEKQKSW----------
                                                                                                                                                                                                                                                                                                                                                                                                                                              ---MALAPHSNF--LAN----HETIKYYVGSKLPGHKRFSWGWEDYFGSIVVAKICSS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STEENKANTNSVTSMEAAREKKIRELEAELSSTKVE----NSAIIQNLRKELLIYKKSQC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  210;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1679 AA; 195141 MW; 5897CD94 CRC32;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1.7%;
17.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  188;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 130; DB Pred. No. 8.3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mismatches 396;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1679
                                                                                                                                                                                  -NTIDDTEMKMK-----SLLTELSNKE
                                  -----QIQAYEEIISSNENALI----
--DGYGGSVLYTRSAVLPESIIPELQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ΑA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 1; Length 1679;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                INTERGENIC REGION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SACCHAROMYCETALES;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         and for commercial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                376;
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835
                                                                                                          885
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 650
                                  911
                                                                                                                                                                                                                                                                                                                                                                                                         691
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                59;
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Оу	DB Qy	D Qy	D Qy	Db Qy	Db Qy	рb	Дb	B 04	Qy Db	Db Qy	Db
1376 1444	1318 1384	1258 1350	1212 1291	1152 1258	1099 1200	1039 1153	980 1112	932 1070	1010	960 960	911
FVRELSKEEMEFLDEIKMEASE-VEKLFGK 1404 	LVERIEKTVE-EGERIIVKEVEEIEEEVEKEVEKEVERTENTLFQRLAEGFNE-LKQDEEN 1375 ::: : : : AFEKLKVNMEKEKDRIIDERTKEFEKKLQETLNKSTSSEAEYSKDIETLKKEWLKEYEDE 1443	FYYYRGRNDAWDGYGGAVYYTRSSVLPNSIIPELEKAAKSIGRDFSTFIRTDNTCGPEPA 1317 SRDHEKDTY	RSAVQKFVQDPNQPGVLYNHDNEYLHYQDDWYI-LSSKIENKPEDYI 1257 :	VLVQNFNISDFNGKWYITSGLNPTFDAFDCQLHEFHTEGDNKLVGNISWRIKTLDSGFFT 1211 :	TCNNRPDETECQIKCGDLFENSVVDEFNECAVSRKKCVPRKSDLGEFPAPDPS 1151	LTAPILLKLVGVLACAFLIVPSADAVDALKTCACLLKGCRIELAKCIANPACAANVACLQ 1098 ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ;	ITRKRINGTFLLKILPPIQSADLR-TTGGRSSRPLSAFRSGESKGIFDIVPLPSKNELKE 1038	M-EATEVEKLEGRALPIRKLMAVATHCFTSPCHDRIRFESSDDGIGRLG 979		5 TAAQKVGRDENTEIKTDNTGGPEPPLVERLEKKVEEGERTIIKEVEEIEEEVE 888 	::: : : ELKNELAKTKENYDAKIELEKKEKWARBEDLSRLRGELGEIRALQPKLK 959

Search completed: October 14, 1999, 03:57:21 Job time: 2354 sec



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GenCore version 4.5

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OM protein - protein search, using sw model

Run on: October 13, 1999, 22:33:02; Search time 44.23 Seconds

(without alignments)
1964.721 Million cell updates/sec

Title: US-09-075-375-2
Perfect score: 7495
Sequence: 1 MALSLHTVFLCKDEALNLYA......MEASEVEKLFGKALDIRKVR 1412

Scoring table: BLOSUM62

Searched: SpTREMBL_10:*
1: sp_archea:*
2: sp_bacteria:*
5: sp_invertebrate:*
6: sp_mammal:*
7: sp_mhan:*
8: sp_organelle:*
9: sp_blant:*
10: sp_plant:*
11: sp_rodent:*
12: sp_vertebrate:*
13: sp_vertebrate:*
14: sp_unclassified:*
```

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	თ	v	4	ω	2	1	NO.	Result	
134	<u></u> 3	134.5	35.	136	136.5	137	137	139.5	140	140.5	141			142.5	·	14	144.5	4	4	15	155.5	156	156	7.		43	2508	55	score		
														1.9												2		4		Query	de
620	978	946	1312	1127	3724	1676	1109	1025	800	1302	1002	5105	1199	1819	1558	2166	839	2748	3113	1939	886	1933	1365	2401	2269	462	473	478	тепаст 1		
4	Ν	2	4											N															מט	3	
043663	067124	P70888	Q92878	Q9YVT6	077320	023332	Q00756	Q12176	Q59066	Q49547	066583	061201	P91349	Q9ZLV0	096275	051465	Q26024	Q03767	Q13246	Q25662	029230	Q90337	Q49525	Q26216	Q26223	Q39249	Q40251	Q40593	10		
043663 homo sapien	67124	œ	92878 homo	- 12) plas	O23332 arabidopsis	oryctolagu		0	~	w	_) caenorhabd	0 helicobact	p.	'n		sacch) plasm	a	7		6216	26223	39249 arabidopsi	lactuca s	40593 nicotiana	Description	7)	

45	44	43	42	41	40	39	38	37	36	35	34	ယ	32	31	30
129	129	129	129.5	129.5	129.5	130	130	130.5	131	132.5	133	133	133.5	134	134
1.7	<u>,</u>	1.7	1.7	1.7	1.7	1.7	<u>–</u>	1.	1.7	1.8	1.8	1.8	1.8	1.8	
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085431	018392	059462	042263	Q04834	Q48673	042352	Q28641	Q49546	028714	066878	096133	P91121	043254	Q90339	062175
Q85431 rice stripe	018392 drosophila	059462 pyrococcus	042263 xenopus lae	Q04834 xenopus lae	Q48673 Lactococcus	042352 cyprinus ca	Q28641 oryctolagus	Q49546 mycoplasma	028714 archaeoglob	066878 aquifex aeo	096133 plasmodium	P91121 caenorhabdi	043254 homo sapien	Q90339 cyprinus ca	O62175 caenorhabdi

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Query Match
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SEQUENCE
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"Molecular cloning of violaxanthin de-epoxidase from romaine and expression in Escherichia coli.";

Proc. Natl. Acad. Sci. U.S.A. 93:6320-6325(1996).

EMBL; U31462; AAC49373.1; -.

MENDEL; 8691; LACsa; Vdel; 1.
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euphyllophytes; Spermatophyta; Magnollophyta; eudicotyledons;
core eudicots; Asteridae; euasterids II; Asterales; Asteraceae;
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Q40251;
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01-JAN-1999 (TrEMBLrel. 09, Last ann
VIOLAXANTHIN DE-EPOXIDASE PRECURSOR.
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MEDLINE; 96270536.
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361 RDFNNFITIDNSCGPEPPLVERLEKTAEEGEKLLIKEAVEIEEEVEKEVEKVRDTEMTLF
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                   RDFNNFITIDNSCGPEPPLVERLEKTAEEGEKLLIKEAVEIEEEVEKEVEKVRDTEMTLF
                                                                   DDWYILSSQIENKPDDYIFVYYRGRNDAWDGYGGSVIYTRSPTLPESIIPNLQKAAKSVG
                                                                                       DDWYILSSQIENKPDDYIFVYYRGRNDAWDGYGGSVIYTRSPTLPESIIPNLQKAAKSVG
                                                                                                                                                       FDCQLHEEHMENDKLVGNLTWRIKTLDGGFFTRSAVQTFVQDPDLPGALYNHDNEELHYQ
                                                                                                                                                                                                                           NSVVDQENECAVSRKKCVPRKSDVGEFPVPDRNAVVQNFNMKDFSGKWYITSGLNPTFDA 240
                                                                                                                                                                                                                                                                      PRVDAVDALKTCACLLKECRIELAKCIANPSCAANVACLQTCNNRPDETECQIKCGDLFE
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                                                                                                                                    FDCQLHEFHMENDKLVGNLTWRIKTLDGGFFTRSAVQTFVQDPDLPGALYNHDNEFLHYQ
                                                                                                                                                                                                    NSVVDQFNECAVSRKKCVPRKSDVGEFPVPDRNAVVQNFNMKDFSGKWYITSGLNPTFDA
                                                                                                                                                                                                                                                                                                      PRVDAVDALKTCACLLKECRIELAKCIANPSCAANVACLQTCNNRPDETECQIKCGDLFE 180
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                                                                                                                                                                                                                                                                                                                                                                                                          MALSLHTVFLCKEEALNLYARSPCNERFHRSGQPPTNIIMMKIRSNNGYFNSFRLFTSYK 60
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473 AA;
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Last annotation update)
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Pred. No. 1.6e-136;
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VIOLAXANTHIN DE-I
: 102E7001 CRC32.
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SEQUENCE
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Q39249;
01-NOV-1996
01-NOV-1996
01-JAN-1999
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Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
euphyllophytes; Spermatophyta; Magnoliophyta; eudicotyledons;
core eudicots; Rosidae; eurosids II; Brassicales; Brassicaceae;
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                                                                                                                                                                                                                                                                                                                                                                                                                                     951 MAVATHCFTSPCHDRIRFFSSDDGIGRLGITRKRINGTFLLKILPPIQSADLRTTGGRSS
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                            TCGPEPALVERIEKTVEEGERIIVKEVEEIEEEVEKEVEKVGRTEMTLFQRLAEGFNELK 1370
        TCGPEPALVERIEKTVEEGERIIVKEVEEIEEEVEKEVEKVGRTEMTLFQRLAEGFNELK
                                                                                              NKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELEKAAKSIGRDFSTFIRTDN
                                                                                                                                                              DNKLVGNISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLYNHDNEYLHYQDDWYILSSKIE
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                                                                                                                                                                                                                                                                                                                                                                    RPLSAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKLVGVLACAFLIVPSADAVDALKTC
                                                                          NKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELEKAAKSIGRDFSTFIRTDN
                                                                                                                                           DNKLVGNISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLYNHDNEYLHYQDDWYILSSKIE
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462 AA;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0;
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Pred. No. 4.5e-132;
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SEQUENCE FROM N.A.

STRAIN-YM;

MEDLINE; 95021522.

MEDLINE; 95021522.

KEEN J., SINHA K., BROWN K., HOLDER A.;

"A gene coding for a high-molecular mass rhoptry protein of plasmodium yoelli.", 65.171-177/1994)

Mol. Biochem. Parasitol. 65:171-177(1994). EMBL: L27838; AAA21304.1;

2269 AA; 265158 MW; E0A79FA6 CRC32;

01-NOV-1996 (TrEMBLrel. 01, Created)
01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
01-NOV-1998 (TrEMBLrel. 08, Last annotation update)
RHOPTRY PROTEIN.

PRELIMINARY;

Plasmodium berghei yoelii.

Eukaryota; Alveolata; Apicomplexa; Haemosporida; Plasmodium.

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RESI O226.	04 04 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Q26216 Q26216 Q26216; Q26216; Q26216; Q26216; Q1-NOV-1996 (TIEMBLIEL 01, Created) Q1-NOV-1996 (TIEMBLIEL 01, Last sequence update) Q1-NOV-1998 (TIEMBLIEL 08, Last annotation update) Q1-NOV-1998 (TIEMBLIEL 08, Last sequence update) Q1-NOV-1998 (TIEMBLIEL 01, Last sequence update) Q1-NOV-1998 (TIEMBLIEL 01, Last sequence update) Q1-NOV-1998 (TIEMBLIEL 01, Last sequence update) Q1-NOV-1998 (TIEMBLIEL 08, Last sequence update) Q1-NOV-1998 (TIEMBLIEL 08, Last sequence update) Q1-NOV-1998 (TIEMBLIEL 08, Last sequence update) Q1-NOV-1998 (TIEMBLIEL 01, Last seque	815 GGSVLYTRS

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Query Match

255;

Match 2.6%; Score 194.5; DB 5; Local Similarity 18.4%; Pred. No. 0.0069;

304 YILSSQIENKPDDYIFVYYRGRNDAWDGYGGSVIYTRS-----PTLPESIIPNLQ--KA 355

Conservative 213; Mismatches 436; Indels 483;

Length 2269;

Gaps

34 YTISNQIKNKLN--VSTYPEGR----EGFTSSLELAKSWEKTKLETITELTKSNEETVRL 87

SEQUENCE

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356 AKSVGRDFNNFITTDNSCGDEPPLVERLEKTAEEGEKL-----LIKEAVEI 401
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                                                                                                                                                                                                                                                                                                                                                                                                                                  308 TNVDNTKEEEAKONYDKSNEHMTTIPTNEDEISKIISEVKTMKDEILSKVNTYIDENKKY 367
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                                                                                                                                                                                                                                                                                    638 VACLOTCNNRP----DETECQIKCGDLFEN----SVVDEFNECAVSRKKCVPRKSD----- 686
                                                                                                                                                                                                                                                                                                                                     368 KETVNSEHSQFTE-----LTDKIKAEVSDK------ELKK----- 397
                                                                                                                                                                                         686 ------VGDEPVPDPSVLVQKFDMKDFSGKWFITRGLNPTFDAFDCQLHEFHTEE- 735
                                                 508 IKYFSDLKANLGINEENMLYNOFTEK--EKTFNDIKEKNI---HINEEI------S 552
                                                                                               735 ----NKLYGNLSWRIRIPDGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLYQDDWYILSS 790
                                                                                                                                           453 KDMLNQNIKTYKETNSIDKS-YIEKFE-QILTGK---QTKLENKFTEFSLNNHEANNNEL 507
  791 KVENSPEDYIF------GY 814
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EKEIRELFKKY------LDEEAERKYLEGLKLELNKKIKDIIAKIEYVKNTVEL 135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EDPIDDIE-DKIKLENLRSKIDNVYDKIQKMEIETVKSHLNNIETNNKLPNTILEIKKYI 254
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1143 KNKELFEKYEOEV----TVLLNKYYAVELK-----NKFDKTKN-----YSEQI 1181
                                                                     1118 KE----AGKNTQE----IK 1142
                                                                                                                                       1083 -----NVSLNFNNIEMADTKSOYIL------NIKKNNGTNNTDYNI 1117
                                                                                                                                                                                                          1049 VSECIKNITNIKTYIVNEKNN------INTYFKNA--EEYNQ------ 1083
                                 806 GRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDFNTFIKTDNTCGPEPPLVERL 865
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
2.2%; Score 167.5; DB 5; Length 2401;
Best Local Similarity 16.7%; Pred. No. 0.26;
Matches 260; Conservative 274; Mismatches 498; Indels 525; Gaps
                                                                                                   746 RTPDGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLYQDDWYILSSKVENSPEDYIFVYYK 805
                                                                                                                                                                       686 VGDFPVPDPSVLVQKFDMKDFSGKWFITRGLNPTFDAFDCOLHEFHTEENKLVGNLSWRI 745
                                                                                                                                                                                                                                          632 -PACAANVACLOTC-----NNRPDETECQIKCGDLFENSVVDEFNECAVSRKKCVPRKSD 685
                                                                                                                                                                                                                                                                              999 --VKEYTDEIEKN------NKKINAELSNSEKIITQLKENSSLKECQSKIKSTIDDNY 1048
                                                                                                                                                                                                                                                                                                                  579 LMVWEKWGQFAKTAIVAIFILSVASKADAVDALKTCTCL----LKECRLELAKCISN-- 632
                                                                                                                                                                                                                                                                                                                                                  967 QNNNTDÍNQÝLSKIENÍ------ 999
                                                                                                                                                                                                                                                                                                                                                                                519 ICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGKHNLSPAHSINQNVPKGNSGCKFPKDVA 578
                                                                                                                                                                                                                                                                                                                                                                                                                    908 MKALNISHDDYKIYHTISKNH-EEKISDIRKNSLKIIQDFSEESYINDIKKELEKNVLES 966
                                                                                                                                                                                                                                                                                                                                                                                                                                                       472 LRMALAPHSNFLANHETIKYYVGSKLPGHKRFS-----WGWEDYFGSI------VVAK 518
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         848 GKSLGNLFLQQIDEEKKKAEHTIKAMEAYIDDLDNIKKKSQEIEKEMNINMDIKMDIHKE 907
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         437 -----FVRELSKEEKEI------LNELQMEATEVEKLEGRALPI-----RK 471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         789 KIMFNEDPKEIEKKIENIVEKI-DKKKNIYKEIDKLLNEISKIENDKTSLEKLKNINLSY 847
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         391 EKLLIKEAVEIBEEVEKEVEKVRDTEMTLFQ---RLLEGFKELQQDEEN----- 437
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             731 GKEKNIKYPDENKIKNDIDTLNQKIDKSIETLTEIKKNSENHIDEIKGQIDKLKKV--PN 788
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               331 GYGGSVIYTRSPTLPESIIPNLQKAAKSVGRDFNNFITTDNSCGPEPPLVERLEKTAEEG 390
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                683 YNTNEDTENEIGKSIELLNTK----VLEKVKANVTNLNEIKEKLKDYDFQDF----- 731
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                290 YNHDN------EFLHYQDDWYILS-----SQIENKPDDYIFVYYRGRNDAWD 330
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  659 -----SI 682
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  230 ITSGLNPTFDAFDCOLHEFHMENDKLVGNLTWRIKTLDGGFFTRSAVOTFVQDPDLPGAL 289
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        604 KKTELETKFTGLSLNNHESNNKELLTYFYDLKANLGK---NKENMLYKOFNEKEKAVE-- 659
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        186 Q-----FNECAVSRKKCV----PRKSDVGEFPVPDRNAVVQNFNNKDESGKWY 229
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         556 LNTNELITN------CHNKOTTLKDKLNONIKTIKETNSIDKIYTDKFENILTD 603
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         141 IELAKCIANPSCAANVACLQTCNNR----PDETECQIKC------GDLFENSVVD 185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE 2401 AA; 281980 MW; 39A40760 CRC32;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           509 VSDEEIKKYENKFNDSKSLINETKKSIEEEYQNINT---LKKVD--DYIKVC----- 556
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               453 PPNEMKYQ--KPSIEIKIMKDEFLSKVNKYNDFD--KVYKEKVESEHNKFTELTNKIKTE 508
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EMBL; U36927; AAB41263.1; -. NON_TER 1 1 1
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 23 PCNERFHRSGOPPTNIIMMK--IRSNNGYFNSFRLFTSYKTSSFSDSSHCKDKSQICSID 80
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ry Match 2.1%; Score 156; DB 2; Length 1365; st Local Similarity 16.8%; Pred. No. 0.57; ches 209; Conservative 187; Mismatches 420; Indels 430; Gaps 52; 272 TRSAVQTFVQDFDLPGALYNHDNEFLHYQDDWYILSQIENKFDDYIFVYYRGRNDAWDG 331 : : : 282 TRNQIQEFINTNKNNP-NYSELISQLTSKRDSKNSVTDS 319	SEQUENCE FROM N.A. STRAIN=M156; MEDLINE; 95369882. PENSEN L.T., LANDEFOGED S., BIRKELUND S., CHRISTIANSEN G.; "Selection of Mycoplasma hominis PG21 deletion mutants by cultivation in the presence of monoclonal antibody 552."; Infect. Immun. 63:3336-3347(1995). EMBL; U21962; AAA81013.1; SEQUENCE 1365.AA; 154982 MW; 23BE4182 CRC32;	01-NOV-1996 (TrEMBLrel. 01, Created) 01-NOV-1996 (TrEMBLrel. 01, Last sequence update) 01-NOV-1998 (TrEMBLrel. 08, Last annotation update) LMP1. LMP1. LMP1. Mycoplasma hominis. Bacteria: Firmicutes: Bacillus/Clostridium group: Mollicutes: [1]	PRELIMINARY; PRT; 1365 AA.	ILFORLAEGFNELKODEENFYRELSKEEMEFLDEIKMEASEVEKL	EKTVEEGERIIVKEVEEIEEEVEKE 134	3 YEAENIFINI	1481 DNISNSINNVK	1177 DAFDCQLHEFHTEGDNKLVGNISWRIKTLDSGFFTRSAVOKFVODDNODGVIT VYTTENGEN.	1122 VDEFNECAVSRKKCVPRKSDLGEFPAPDPSVLVQNFNISDFNGKWYIT 1423 ITAQNELLINIXVVNKAKCVIDITENETE	1363 ISPFKANDLEGIDTNKNLGKYNTEMNNIYEEFIKSYDLITHYLETVSKEPITYEOTKAKE 1	1315 IKNIESNVNQHKKNYEIGIVEKINEIAKA 1086 ANPACAANVACLOTCNNRPD-FTECO	1043 L	983 KRINGTFLLKILPPIQSADLRTTGGRSSRPLSA	SSDDGIGRLGITR 98	1182 KEIKDAHNTETSQADKSEKKMNEIKNEQIRI	VEEGERTIIKEVEELEEEVEKVRDKEVTLFSKLFEGFKELORDFENET DET SETTEN 20

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956 HCFTSPCHDRIRFFSSDDGIGRLGITRKRINGTFLLKILPPIQSADLRTTGGRS 1009	PEPPLVERLEK 38 JOODEENEVREL 4 CITKKLETF 4 ETKKLETF 4 SKHNLSPAHS-1 5 GRANTEL 4 SKHNLSPAHS-1 5 GRANTEL 4 PRECAVSRKKCV 6 PNECAVSRKKCV 6 PNECAVSRKKCV 6 FNECAVSRKKCV 6 FNECAVSRKKCV 6 FNECAVSRKKCV 6 I : : : NTASMYSAKSSLD NTASMGSAKSSLD RALPIRKLMAVAT
Query Match Best Local Similarity 17.0%; Pred. No. 0.9; Best Local Similarity 17.0%; Pred. No. 0.9; Matches 203; Conservative 181; Mismatches 454; Indels 356; Gaps Matches 203; Conservative 181; Mismatches 454; Indels 356; Gaps Matches 203; Conservative 181; Mismatches 454; Indels 356; Gaps Matches 203; Conservative 181; Mismatches 454; Indels 356; Gaps Matches 203; Conservative 181; Mismatches 454; Indels 356; Gaps Matches 203; Conservative 181; Mismatches 454; Indels 356; Gaps Matches 203; Conservative 181; Mismatches 454; Indels 356; Gaps Matches 203; Conservative 181; Mismatches 454; Indels 356; Gaps Matches 203; Conservative 181; Mismatches 454; Indels 356; Gaps Matches 203; Conservative 181; Indels 356; Conservative 181; Indels 356; Conservative 181; Indels 356; Conservative 182; Inde	Db 1125 DISNFTLNHOKNOFTAKDITPKISLERKLNETKOYLLPIIKEKAVSKISEIEKN-KKEL 1183 Oy 1349 EKVERTENTLFCSLABGEFNELKDEENFYRELSKEEMEFLDEIKME 1394

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029230;
01-JAN-1998 (TrEMBLrel. 05, Created)
01-JAN-1998 (TrEMBLrel. 05, Last sequence update)
01-NOV-1998 (TrEMBLrel. 08, Last annotation update)
                    STRAIN=VC-16 / DSM 4304 / ATCC 49558;
                                                                                                                                                                                                 PURINE NTPASE, PUTATIVE
                                                                                                                                                                                                                                                                                                                                                                                                                             1562 LELNQVKSEIDRKLAEKDEEMEQIKRNSQRVLDSMQSTLDSEVRSRNDALRVKK 1615
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1356 MTLFQ-----RLAEGFNELKQDEENFVRELSKEEMEFLDEIKM--EASEVEK 1400
                                                      SEQUENCE FROM N.A
                                                                                                     Archaeoglobus
                                                                                                                                                    Archaeoglobus fulgidus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1502 KNLQQEISDLSEQLGETGKSIHEIEKAKKTVESEKAEIQTALEEAEGTLEHEESKILRVQ 1561
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1296 KSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGERIIVKEVEEIEEEVEKEVEKVGRTE 1355
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1420 LQSEVEDLMIDGERANALAANLDKKQRNFD------KVLADWKQK---YEESQAEL 1456
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1237 H-YQDDWYILSSKIENKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELEKAA 1295
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1179 FDCQLHEFHTEGD--NKLVGNISWRIKTLDSGFFTRSAVQKFVQDDNQPGVLYNHDNEYL 1236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1119 NSVVDEFNECAVSRKKCVPRKSDLGEFPAPDPSVLVQNFNISDFNGKWYITSGLNPTFDA 1178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1376 TDAIQRTEELEESKKKLAQRLQDAEE------SIEAVNSK---CASLEKTKQR 1419
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1321 ----EVKAKNALAHAVQSARHDCDLLREQYEEEQEAKAELQRGMSKANSEVAQWRAKYE 1375
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1073 LLKGCRIELAKCIANPACAANVAC--LQTCNNRPDETECQIKCG------DLFE 1118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1300 LTRGKQAFTQQIEDL-----KRHVEE------ 1321
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1206 IDNIQRIKQKLEKEKSEYKMEI-DDLSSNMEAVAKAKGN---LEKM-----CRT--LED 1253
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1254 QLSEIKAKSDENSRQLNDMN-----
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1086 ISOFLSKIEDEOSLGAQLQKKIKELQARIEELEEEIEAERSARAKVEKQRADLSRELEEI 1145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1031 -----DDLEGSLEQEKKLRMDLERVKRKLEGDLKLAQESIMDLENEKQQSDEKIKKKDFE 1085
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 965 RIRFF--SSDDGIGRLGITRKRINGTFLLKILPPIQSADLRTIGGRSSR------P 1012
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               905 FKELORDEENFLRELSKEEMDVLDGLKMEATEVEKLFGRALPIRKLMAVATHCFTSPCHD 964
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                884 EEEVEK-----VRDKEVILFSKLFEG 904
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                844 --DENTFIKTDNTCGPE------PPLVERLEK------KVEEGERTIIKEVEEI 883
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           983 SQD-----ESIAKLTKEKKALQEAHQQTLDDLQAEEDKVNTLTKAKTKLEQQV----- 1031
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            807 RNDAWDGYGGSVLYTRS----- 844
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                                                                                                        Euryarchaeota; Archaeoglobales; Archaeoglobaceae;
                                                                                                                                                                                                                                                                                                                         PRELIMINARY;
                                                                                                                                                                                                                                                                                                                    PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -----AQRARLQTENGEFSRQLEEKEALVSQ 1299
                                                                                                                                                                                                                                                                                                                    886 AA
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Best Local :
                                            1406 LPIR 1409
                                                                                                                   1349 EKVGRTEMTLFORLAEGFN----ELKQDEENFVRELSKEEMEFLDEIKMEASEVEKLFGKA 1405
                                                                                                                                                                                                                 1289 PELEKAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGERIIVKEVEEIEEEVEKEV 1348
642 EEIR 645
                                                                                                                                                                                                                                                                                                                 1231 --HDNEYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSII 1288
                                                                                                                                                                                                                                                                                                                                                                                                               1191 -----DNKLVGNISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLYN-- 1231
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1131 SRKKCVPRKSDLGEFPAPDPSVLVQNFNISDFNGKWYITSGLNPTFDAFDCQLHEFHTEG 1190
                                                                                                                                                                                      551 KELKSSLREI-----
                                                                                                                                                                                                                                                                  512 SSHDAE-----KLSAESEE-----YRKVKERLDGLRGQQKILLSSA---SRI 550
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1071 ACILKGCRIELAKCIANPACAANVACLQTCNNRPDETECQIKCGDLFENSVVDEFNECAV 1130
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                                                                                                                                                                                                                                                                                                                                                                   452 IMAEYTREMKRIAEELAKADEIEKKLKERLEKVEKALEKQETVLKYRQMVDELKALENEL 511
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 405 KLKKLIAKKSSLKTRGAQLKKAVEE------LKSAERTCPVCGRELDEEHRKN 451
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               373 -----KMYDLLSKAKEEE-KEITE 404
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             330 D-----TLKPKMDRMQGIK-- 373
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MEDLINE; 98049343.

KLENK H.-P., CLAYTON R.A., TOMB J.-F., WHITE O., NELSON K.E., KETCHUM K.A., DODSON R.J., GRAHAM D.E., K., PETERSON J.D., RICHARDSON D.L., KERLAVAGE A.R., GRAHAM D.E., KYRPIDES N.C., FLEISCHMANN R.D., QUACKENBUSH J., LEE N.H., SUTTON G.G., GILL S., KIRKNESS E.F., DOUGHERRY B.A., MCKENNEY K., ADAMS M.D., LOFTUS B., PETERSON S., REICH C.I., MCNEIL L.K., BADGER J.H., GLODEK A., ZHOU OVERBEEK R., GOCAYNE J.D., WEIDMAN J.F., MCDONALD L., UTTERBACK T. SADOW P.W., D'ANDREA K.P., BOWMAN C., FUJII C., GARLAND S.A., MASON T.M., OLSEN G.J., FRASER C.M., SMITH H.O., WOESE C.R., VENTTER J. OLSEN G.J., FRASER C.M., SMITH H.O., WOESE C.R.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EMBL; AE001032; AAB90211.1; -. TIGR; AF1032; -. PFAM; PF00470; RecF; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          968 FFSSDDGIGRLGITRKRINGTFLLKILPPIQSA--DLRTTGGRSSRPLSAFRSGFSKGIF 1025
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Hypothetical protein SEQUENCE 886 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              290 -----SILEKLLSEINQALRDVEKREGDLTREAAGIQAQLKKAEE 329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    250 GLEEKLRELEKQLKEVVERIEDLEKKAKEVKEL-------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         911 DEENFLRELSKEEMDV---LDGLKMEATEVEKLFGRALPIRKLMAVATHCFTSPCHDRIR 967
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        198 RISEEIKSIESLREKLSEEVRNLESRLKELEEHKSRLESLRKQESSVLQEV-----R 249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       797 EDYIFVYYKGRNDAWDGYGGSV--LYTRSAVLPESIIPELQTAAQKVGRDFNTFIKTD-N 853
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       854 TCGPEPPLVERLEKKVEEGERTI----IKEVEEIEEEVEKVRDKEVTLESKLFEGFKELOR 910
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        152 EDY-----ENAWKNLGAVIRMLEREKERLKEFLSQEEQIKRQKEEK-----KAEIE 197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 sulphate-reducing archaeon Archaeoglobus fulgidus.", Nature 390:364-370(1997).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         "The complete genome sequence of the hyperthermophilic,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Y Match 2.1%; Score 155.5; D Local Similarity 20.6%; Pred. No. 0.34;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    886 AA; 103633 MW; BF6BE847 CRC32;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative 85; Mismatches 221; Indels 221; Gaps
                                                                   -QSLRPFYNKWLELKDAESRLESELKRRE-KLEDEISEAIAKLEEANGKA 641
                                                                                                                                                                    --EEAL-KNVESERGELHRKIREEGFESLEELEREV 593
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DB 1; Length 886;
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Q25662; Q1-NOV-1996 (TIEMBLIEL 01, Created)
Q1-NOV-1996 (TIEMBLIEL 01, Last sequence update)
Q1-AUG-1998 (TIEMBLIEL 07, Last annotation update)
REPEAT ORGANIELLAR PROTEIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         WERNER E.B., TAYLOR W.R., HOLDER A.A.; submitted (DEC-1995) to the EMBL/GenBank/DDBJ databases. EMBL; U43145; AAC63403.1; - SEQUENCE 1939 AA; 223001 MW; 5FC4E4C2 CRC32;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Eukaryota; Alveolata; Apicomplexa; Haemosporida; Plasmodium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Plasmodium chabaudi.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       380 VERLEKTAEEGEKLLIKEAVEIEEEVEKEVEKVRDTEMTLFQRLLEGFKELQQD---EEN 436
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    488 TIKYYVGSKLPGHKRFSWGWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLF 547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     152 KINNKEIITLKREEK.-LNDIESEYIEKNKEKEKL.--NYEVTNIKMSL------D 196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    437 FVRE-----LSKEEKEILNELQME----ATEVEKLFGRALPIRKLRMALAPHSNFLANHE 487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  548 SHGKHNLSPAHSINQNVPKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADA 607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            608 VDALKTCTCLLKECRLELAKCISNPACAANVACLQTCNNRPDETECQIKCGDLFENSVVD 667
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                243 -----SFEEKRKM 264
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      95 VKEYEVKIEELEKEL --- KLEKEKQINKEYEKELNEKSEEIKRQMELLKEKELNINLKEN 151
                                                                                                                                                                                                                                                                                                                                                                                                                                           668 EFNECAVSRKKCVPRKSDVGDFPVPDPSVLVQKFDMKDFSGKWFITRGLNPTFDAFDCQL 727
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1013 LSAFRSGESKGIFDIVPLPSKNELKELTAPLLLKLVGVLACAFLIVPSADAVDALKTCAC 1072
                                                                                                                                                                                                                                                                                                                                                                                                            288 KENEIIIEKLKDIESRE--------KDEKSK-----EEKFASMENEL 321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          9
                                                                                                                                                                                                                                    847 TFIKTDNTCGPEPPLVERLEKKVEEGERTIIKEVEEIEEEVEKVR------DKEVT 896
                                                                                                                                                                                                                                                                     366 ----KINNMKEKLSSI-----ND--KGIDNTVLHSEEEKI-NKLLKEKETELNEIHKKYN 413
                                                              491 -----NDKISSLNSE------ 513
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   KLTCEVQEKKDNLEKIN------KKVIEKENNLRELKEFMKEKNEIIESLDG----- 243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             189;
                                                                                                                                                                                                                                                                                                                                        NTLKSDLSKNACOMEVYKLEIKD---LSOSLVEKERE-----IFEIKNEY----DD-- 366
                                                                                                                                                                                                                                                                                                                                                                         HEFHTEENKLYGNLS-WRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLYQDDWY 786
                                                                                                                                                                                                                                                                                                      ILSSKVENSPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDFN 846
                                                                                               VATHCFTSPCHDRIRFFSSDDGIGRLGITRKRINGTFLLKILPPIQSADLRTIGGRSSRP 1012
                                                                                                                                LLEKKTEDAKECHKNELNELNNOLSKLNKEK----DNIKNENTEL------ 491
                                                                                                                                                                  LFSKLFEGFKELORDE----ENFLRELSKEEMDVLDGLKMEATEVEKLFGRALPIRKLMA 952
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Similarity
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17.5%; Pred. No. 1.7;
-----TIKNELNEKEEELEKNKKAHTVEVTNLTKEIK 449
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               167; Mismatches 299; Indels 422; Gaps
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1073 LLKGCRIELAKCIANPACAANVACLQTCNNRPDE-----TECQIKCGDLFENSVVD 1123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1177 DAFDCQLHBFHTEGDNKLVGNISWRIKTLDSGFFTRSAVQK---FVQDPNQPGVLYNHDN 1233
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1234 EYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELEK 1293
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1351 VGRTEMTLFORLAEGENE----LKQDEENFVRELSKEEMEFLDEIKMEASEVEKLFG 1403
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1294 AAKSIGRDEST-FI--RTDNTCGPEPALVERIEKTVEEGERIIVKEVEEIEEEVEKEVEK 1350
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              559 EIEKKYKNEIEMLEEKLKEKENYADLND----EISILRNSIYVKE---KEFI------ 604
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           528 ------VVID 558
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Q13246 PRELIMINARY; PKI; SILS FR. Q13246; Q13246; Q1.NOV-1996 (TrEMBLrel. 01, Created) Q1.NOV-1996 (TrEMBLrel. 01, Last sequence update) Q1.NOV-1998 (TrEMBLrel. 08, Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 643 GLIKQIDELNIQKLKTEEK---YLQLY----NDN------MHMFRSICTKIDMPYSEN 687
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      "Characterization of a novel 350-kilodalton nuclear phosphoprotein that is specifically involved in mitotic-phase progression."; Mol. Cell. Biol. 15:5017-5029(1995).

EMBL; U30872; AAAA2935.1; 605779C3 CRC32; SEQUENCE 3113 AA; 357281 MW; 605779C3 CRC32;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Homo sapiens (Human).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Mammalia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        746 LGEGHKEVVLRIGEQHKEETIILEEKHKDVVTKLGEQHKENIIKLEEEHKDVVTKLG 802
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     688 IKGSDLVDFVTAYIKRRDESSSDANPDTTHK--EMVAELEKRHAAIVAELBEKHKEEIAK 745
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MEDLINE; 95379843.

MEDLINE; 95379843.

ZHU X., MANCINI M.A., CHANG K.H., LIU C.Y., CHEN C.F., SHAN B., JONES D., YANG-FENG T.L., LEE W.H.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Eutheria; Primates; Catarrhini; Hominidae; Homo
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                            1005 EREKSISELSDOTKOEKLILLORCEETGNAYEDLSOKYKAAQEKNSKLECLLNECTSLCE 1064
                                                                                                                                                                                               1065 NRKNELE---- CLKEAFAKEHQEFLTKLAFAEERNONLMLELETVQQALRSEMTDNQNNS 1120
                                                                                                                  1121 KSEAGGLKQEIMTLKEEQNKMQKEVNDLLQENEQLMKVMKTKHECQNLESEPIR----- 1175
                                    1175 -----NSVKEPESERNO-CNFKPOMDLEVKEISLDSYNAQLVQLEAMLRNKELKLQESE 1227
                                                                                                                                                                                                                                      450 ---NELOMEATEVEKLEGRALP--IRKLRMALAPHSNELANHETIKYYVGSKLPGH---- 501
                                                                                                                                                                                                                                                                                                                   433 DEENFVRELS --- KEEKEIL-----
                                                                                                                                                                                                                                                                                                                                                          946 LSETUSLEKKEMSSIISLNKREIEELTQENGTLKEINASLNQEKMNLIGK-SESFANYID 1004
                                                                                                                                                                                                                                                                                                                                                                                                 379 LVERLEKTABEGEKULIKEAVETEEEVE-----KEVE-KVRDTEMTLFQRLLEGFKELQQ 432
                                                                                                                                                        501 KRFSWGWEDYFGSIVVAKICSSRRIPRYFRKSPRI------CCGLDSRGLQLFSHGK 551
                                                                                                                                                                                                                                                                                                                                                                                                                                                             Local Similarity
                                                                           552 HNLSPAHSINONVPKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADAVDAL 611
612 KTCTCL---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ----EMKEFY---ENKI------NLFNKNFEEKKNIYENELNSLRLKYDNEQ 642
                                                                                                                                                                                                                                                                                                                                                                                                                                          240; Conservative 188; Mismatches 443; Indels 434; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                               2.0%; Score 147; DB 4; Length 3113; 18.4%; Pred. No. 5.6;
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        ----LKECRLEL-AKCISNP-----ACAAN 637
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RESULT 11
Q03767
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Q03767 PRELIMINARY; PRT; CO3767; PRT; C11-NOV-1996 (TrEMBLrel. 01, Created)
                                                                                                                                                      2059 ----QLNKEKELLVKESESLOARLSESDYEKLNVSKALEAALVEK 2099
                                                                                                                                                                                                1364 EGFNELKCDEENFVRE-----LSKEEMEFLDEIK-MEASEVEK 1400
                                                                                                                                                                                                                                    1999 HCIQVAEAEVKEKTELLQTLSSDVSELLKDKTHLQEKLQSLEKDSQALSLTKCELENQIA 2058
                                                                                                                                                                                                                                                                               1307 RTDNTCGPEPALVERIEKTVEEGERIIVKEVEEIEEE---VEKEVEKVGRTEMTLFQRLA 1363
                                                                                                                                                                                                                                                                                                                                                                     1253 P-----EDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIÞELEKAAKSIGRDFSTFI 1306
                                                                                                                                                                                                                                                                                                                          1942 QKVIVCLEEELSVVTSERNOL---RGELDTMSKKTTALDQLSEKMKEKTQELESHQSECL 1998
                                                                                                                                                                                                                                                                                                                                                                                                                    1890 DSWKERFLD-----VENELSRIRSEKASIEHEALYLEADLEVVOTEKLCLEKDNENK 1941
                                                                                                                                                                                                                                                                                                                                                                                                                                                             1198 ISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLYNHDNEYLH----YQDDWYILSSKIENK 1252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1844 KLEYFSCDHQELLQRVETSE-----GLNS-----DLEMHADKSSREDIGDNVAKVN 1889
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1144 --EFPAPDPSVLVQNENISDFNGKWYITSGLNPTFDAFDCOLHBEHTE----GDNKLVGN 1197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1831 V-----KK---ENSDLSE 1843
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1085 IANPACAANVACLQTCNNRPDETECQIKCGDLFENSVVDEFNECAVSRKKCVPRKSDLG- 1144
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1792 RDRKVESLLNEMKELDSKLHLQEVQLMT------KIEAC------IELEKI 1830
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1034 -----NELKELTAPLLLKLYGYLACAFLIYPSADAYDALKTCACLLKGCRIELAKC 1084
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1732 PPGEDKTQGSSECISELSFSGPNALVPMDFLGNQEDIHNLQLRVKETSNENLRLLHVIED 1791
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1003 ----RTTGGRS-----SRPLSAFRSGFSKGIFDIVPLPSK------ 1034
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1676 HTSETTERTPKHD-VHQICDKDAQQDLNLDIEKITETGALK---PTGECSGEQSPDTNYE 1731
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1616 TLEMESKLAAEKKOTEOLSLELEVARLOLOGLDLSSRSLLGIDTEDAIOGRNESCDISKE 1675
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1560 QSL----EKLEEKMESQGIMKNKEIQELEQLLSSERQELDCLRKQYLSENEQWQQKLTSV 1615
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1500 EQTGDMSLLSNLEGAVSANQCSVDEVFCSSLQEENLTRKETPSAPAKGVEELESLCEVYR 1559
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1442 KAENLVLSTNLRNFQGDLVKEMQLGLEEGLVPSLSSSCVPDSSSLSSLGDSSFY--RALL 1499
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            961 ------PCHDRIRFFSSDDGIGRLGITRKRINGTFLLKILPPI------OSADL--- 1003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    923 EMDVLDGLKMEATEVEKLF------GRALPIRKLMAVATH------CFTS-- 961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          874 RTIIKEVEEIEEEVEK---VRDKEVTLFSKLFEG-----FKELQRDEENFLRELSKE 922
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1400 QMHFAELQEK------FLSLQSEHKILHDQHCQ--MSSKMSELQTYVDSL 1441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1343 NEVKILNDDSGLLHGELVEDIPGGEF---GEQDNEQHPVSLAPLDESNSYEHLTLSDKEV 1399
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             827 PE----SIIPELQTAAQ-----KVGRDENTFIKTDNTCGPEPPL-----VERLEKKVEEGE 873
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1288 LOCSLOTTMNKLNELEKICEILQAEKYE--LYTELND---SRSECITATRKMAEEVGKLL 1342
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1228 KEKECLOHELOTIRGDLETSNLQDMQSQEISGLKDCEIDAEEKYISGFHELSTSQNDNAH 1287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     784 --DWYILSSKVENSPEDYIFVYYKGRND------AWDGYGGSVLYTRSAVL 826
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           726 QLHEFHTEENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLYQD-- 784
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 690 ----FVPDPSVLVQKEDMKDESGKWEITRGLNP------TEDAFDC 725
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       638 VAC-LOTCNNRPDETE--COIKCGDLFENSVVDEFNECAVSRKKCV--PRK--SDVGDF- 690
                                                  PRT; 2748 AA
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                                                    1269 YEDLVKCKENPDMEFLK-EKSAKLGHTVVSNEAYSELEKKLEQPSLEYLVEHAKATNHHL 1327
                                                                                                                          1218 EFLKEKSAKLGHTVVSNEAYSELEKK-----LEQPSLAYLVEHAK--ATDHHLLSDSA 1268
                                                                                                                                                                                              1179 -----KLEQ---PSLAYLVEH------AKATDHHLLS---DSAYEDLVKCKENPDV 1217
618 LKECRLE-LAKGISNPAC-----AANVACLQTCNNRPDETECQIKCGDLFENSVVDEFN 670
                                                                                                                                                                                                                                                                    1123 YLVEHAKATNHHLLSD--SAYEELVKCKENPDVEFLKEKSAKLGHTVVSNEAYSELEK-- 1179
                                                                                      565 PKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKAD-----AVDALKTCTCL 617
                                                                                                                                                            464 GRALPIRKLRMALAPHSNFLANHETIKYYVGSKLPGHKRFSWGWEDYFGSIVVAK---- 519
                                                                                                                                                                                                                                                                                                                                          1063 HAKATNHHLLSDSAYEELVKCKENPDVEFLKEKSAKLGHTVVSNEAVSELEKKLEOPSLE 1122
                                                                                                                                                                                                                                                                                                                                                                                                              1003 TNHHLLSDSAYEDLVKCKENPDMEFLKEKSAKLGHTVVSNEAYSELEKKLEQPSLEYLVE 1062
                                                                                                                                                                                                                                                                                                      409 --VEKVRDTENTLFQRLLEGFKELQQDBENFVRELSKEEKEILNE--LQMEA-TEVEKLF 463
                                                                                                                                                                                                                                                                                                                                                                          364 -----NNFITTDNS-----CGPEPPLVERLEKTAEEGEKLLIKEAV-EIEEEVEKE--- 409
                                                                                                                                                                                                                                                                                                                                                                                                                                              325 RND---AWDGYGGSV-----IYTRSPTLPESIIPN-----LQKAAKSVGRDF--- 364
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  949 YE-----DLVKCKENPDMEFLKEKSAKLGHTVVSNEAYSELEKKLEQPSLEYLVEHAKA 1002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             BARRELL B., RAJANDREAM M.A., WALSH S.V.;
Submitted (JUL-1995) to the EMBL/GenBank/DDBJ databases.
EMBL; 250046; CAA90372.1; -.
SGD; L0001287; NUM1.
PFAM; PF00169; PH; 1.
SEQUENCE 2748 AA; 313030 MW; FEEE7EDD CRC32;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    276 VQTFVQDPDLPGALYNHDNEFLHYQ------DDWYILSSQIENKPDDYIFVYYRG 324
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      900 -----LKEKSAKLGHTVVSNEAYSELEKKLEQ-----PSLAYLVEHAKATDHHLLSDSA 948
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        216 VQNFNMKDFSGKWYITSGLNPTFDAFDCQLHEFHMENDKLVGNLTWRIKTLDGGFFTRSA 275
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          857 EKKLEQPSLAYLVEHAKATDHHLLSDSAYEDLVKC-----KENSDV-EF------ 900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          170 ECQI-----KCGD--LFENSVVDQFNECAVSRKKCVPRKSDVGEFPVPDRNAV 215
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                801 LAYLVEHAKATDH----HLLSDSAYEELVKCKENPDMEELKEKSAKLGHTVVSNEAYSEL 856
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  116 TFVIVPRVDAVDALKTCACLLKECRIELAKCIANPSC-----AANVACLQTCNNRPDET 169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    748 SAYEDLVKCKENPDV------EFLKEKSAKLGHTVVSSEEYSELQRKYSELEKEVEQPS 800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MURPHY L., RICHARDS C., HARRIS D.;
Submitted (JUL-1995) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   01-NOV-1996 (TremBirel. 01, Last sequence update) 01-NOV-1998 (TremBirel. 08, Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      62 SSFSDSSHCKDKSQICSIDTSFBEIQRFDLKRGMTLILEKQWRQF-----IQLAIVLVC 115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STRAIN=AB972
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                STRAIN=AB972;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Eukaryota, Fungi; Ascomycota, Hemiascomycetes; Saccharomycetales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Saccharomyces cerevisiae (Baker's yeast)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1.9%; Score 146; DB
17.9%; Pred. No. 5.4;
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	a o a	S & S	Qy Qy	VQ QQ VQ	Qy Db Qy Db	Qy Db Qy Db	Oy Oy Oy	Db Qy Qy Db Db
RESULT 12 Q26024 D7 Q26024; AC Q26024; D7 O1-NOV-1996 (TrEMBLrel. 01, Created) D7 O1-NOV-1996 (TrEMBLrel. 01, Last sequence update) D7 O1-NOV-1998 (TrEMBLrel. 08, Last annotation update) D8 TOPDISOMERASE I. OS Plasmodium falciparum. OS Plasmodium falciparum. OC Eukaryota; Alveolata; Apicomplexa; Haemosporida; Plasmodium.	VNESTHKRNEKLLSEPDSEFLIMKAKEQGLIIISEKEISELKUQIURG JETKALARIA DEIKMEASEVEKLIGKALP 1407 : :: :: 1000	1271 YGGAVVYTRSSVLPNSIIPELEKAAKSIGRDFSTFI : : : : :	DG 127 SE 195	1115 DLFENSVVDEFNECAVSRKKCVPRK-SDLGBEPAPDES VLYUM NI SERVENTI 1901 1 1 1 1 1 1 1 1 1	1002 LRTTGGRSSRPLSAFRSGFSKGIFDIVPLPSKNELKEUTAPLLLKLVGVLACAF :: :: :: :: : :	912 -EENFLRELSKEEM	799 YIFVYYKGRNDAWDGYGGSVLYTRGAVLPSSITUGTAAQAVORUFALFIA LATATA (1)	1328 LSDSAYEDLVKCKENPDMEFLKEKSAKLGHTVVSNKEYSELEKKLEQPSL 671 ECAVSRKKCVPRK-SDVGDFPVPDPSVLVQKFDMKDFSGKWFITRGLI 671 ECAVSRKKCVPRK-SDVGDF

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TOSH K.T., KILBEY B.J.K.;
"The gene encoding topoisomerase I from the human malaria parasite plasmodium falciparum.";
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SEQUENCE FROM N.A.
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EMBL; X83758; CAA58716.1;
PFAM; PF01028; Topoisomerase_I; 1.
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SEQUENCE 839 AA; 98109 MW; 1CAFA3F0 CRC32;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         410 EKVRDTEMTLFORLLEGFKELQQDEENFVRELSKEEKEILNELQMEATEVEKLFGRALPI 469
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     530 RKSPRICCGLDSRGLOLFSHGKHNLSPAHSINONVPKGNSGCKFPKDVALMVWEKWGQFA 589
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  129 KLIKKS---EENF----EPINRW-WEKIDDQTDIQWNY-----
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    590 KTAIVAIFILSVASKADAVDALKTCTCLLKECRLELAKCISNPACAANVACLQTCNNRPD 649
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               159 -----LEHRGL-IF-----SPPY-VQHHVP-----IFYKSIKIEL-----NA 188
                                                                                                                       1039 LTAPLLIKLVGVLACAFLIVPSADAVDAL--KTCACLLKGCRIELAKCIANPACAANVAC 1096
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        272 KEEEKKMRMEKELPYTYALVDWIREKISSNKAEPPGLFRGRGEHPKQGLLKKRIFPEDVV 331
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                704 KDFSGKWFITR LNPTFDAFDCQLHEFHTEENKLVGNLSWRIRTPDGG-----FFTRSAV 758
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   650 ETECQIKCGDLYENSVVDEFNECAVSRKKCVPRKSDVGDFPVPDPSVLVQKFDM----- 704
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              189 KSEELATYWCS-----AIGSDYCTKEKFILNFFKTFIN-----SLENDNIIKO 231
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                79 SKRKSNELKEKNNLKEGKKKYVEKKSRTV----KDETKLTNVIKKETQNNKK-----PK 128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   24 INKIKQNLG---NN--KSCNSRSSKKESIKKOKSNSELGIKKNTKKSLGIKKEEEKKKQI 78
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       332 INISKDAPVPRLYDNMCGHNWGDIYHDNKVTWLAYYKD------SINDQIKYTFLS 381
                                        1097 LQTCNNRPDEKFCQIKCGDLFENSVYDEFNECAVSRK----KCVPRKSDLGEFPAPDPSV 1152
                                                                                                                                                                                                                                                                                                                                                                           863 ERLEKKVEEGENIIIKEVEEIEEEVEKVRDKEVTLFSKLFEGFKELQRDEENFLRELSKE 922
                                                                                                                                                                                                                                                                                                                                                                                                                      382 AQSKEKGYKDLMFYENAR------KLKSCVHKIREDYKNKMKNKNIIDKQLGTAVYLI 433
                                                                                                                                                                                                                                                                                                                                                                                                                                                            807 RNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDFNTFIKT----DNTCGPEPPLV 862
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               759 QKFVQDPKYPGILYN------HDNE--YLLYQDDWYILSSKVENSPEDYIFVYYKG 806
                                                                                                                                                                                                                                                                                                                                     434 DFLALRV-GGEK-----DIDEEADTV-------GCCSLRVEHISFAHDIPFK 472
                                                                                560 IMPTLSAKVERTYNASITLDQQLKRIKEVYGKTTYSLYSG-ETELHK------SK 607
                                                                                                                                                                 980 ITRKRINGTEL-KILPPIOSADLRTTGGRSSRPLSAFRSGFSKGIFDIVPLPSKNE-LKE 1038
                                                                                                                                                                                                                                                  473 SVD----SKEQKINDEKVNKIPLPINLESISSEDCYITLDFLGKDSIRYFNI----- 521
                                                                                                                                                                                                                                                                                          923 EMDVLDGLKMEATEVEKLFGRALPIRKLMAVATHCFTS---PCHDRIRFFSSDDGIGRLG 979
608 KRKSSHLTSDTNILSDASDSTINDVNNEYDENGINKKLSYATTVGKENDVDDKNSP-IEV 666
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ------FMPIKDHLLKLREEKLNKTKEE 271
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RESULT 13
051465
1D 051465
AC 051465
DT 01-JUN
DT 01-JUN
DT 01-VUN
RC STRAIN
RA SEQUEN
RC STRAIN
RA FRASER
RA LATHICI
RA FRASER
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RA PETERS
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599 -NIVEFRDRYY------DEVNIFVTQLEESKLQYSKWQGEMDSNLKNIE------ 641
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FRASER C.M., CASJENS S., HUANG W.M., SUTTON G.G., CLAYTON R.A.,
LATHIGRA R., WHITE O., KETCHUM K.A., DODSON R., HICKEY E.K., GWINN M.,
DOUGHERTY B., TOMB J.-F., FLEISCHMANN R.D., RICHARDSON D.,
PATTERSON J., KERLAVAGE A.R., QUACKENBUSH J., SALZBERG S., HANSON M.,
VAN VUGT R., PALMER N., ADAMS M.D., GOCAYNE J.D., WEIDMAN J.,
UTTERBACK T., WATTHEY L., MCDONALD L., ARTIACH P., BOMMAN C.,
GARLAND S., FUJII C., COTTON M.D., HORST K., ROBERTS K., HATCH B.,
SMITH H.O., VENTER J.C.;
GEARLAND S., FUJII C., COTTON M.D., HORST K., ROBERTS K., HATCH B.,
                                                                    219 FNMKDFSGKWYITSGLNPTFDAFDCQLHEEHMENDKLVGNLTWRIKTLDGGFFTRSAVQT 278
                                                                                                                                            567 IESFYNMFEKTOETLK-------VD-FNTSLIN-----IKDEIGK------- 599
                                                                                                                                                                                                                 159 LQTCNNRPDETECQIKCGDLFENSVVDQFNECAVSRKKCVPRKSDVGEFPVPDRNAVVQN 218
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Hypothetical protein.
SEQUENCE 2166 AA; 254243 MW; F2899A0A CRC32;
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Nature 390:580-586(1997).
Nature 390:580-586(1997).
EMBL; AE001153; AAC66876.1; -.
TIGR; BB0512; -.
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                                                                                                                                                                                                                                                                                     482 RFNNNYSNLNDNINAKYTALFESLDSSSSKFENOMESKYKSFTD----KLTAGMDEFSLM 537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM N.A.
STRAIN=ATCC 35210 / B31;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            "Genomic sequence of a Lyme disease spirochaete, Borrelia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Bacteria; Spirochaetales; Spirochaetaceae; Borrelia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Borrelia burgdorferi (Lyme disease spirochete)
                                                                                                                                                                                                                                                                                                                                                          99 LEKOWROFIQLAIVLVCTFVIVPRVDAVDALKTCACLLKECRIELAKCIANPSCAANVAC 158
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               44 RSNNGYFNSFRLFTSYKTSSFS--DSSHCKDKSQICSIDTSFEEIQRFDLKRGM---TLI 98
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Db 1473LENKTELIQSFRLDIEQKMKDDKENFYLDFTKEFSSKKKDMOSEIAIMF 1521	
CLOTONNRPDETECOTROCALES 1	
Db 1437 FKDLKIRGEELKYSLENFIASYNDKIQNLEYDLSKN	
EKDVIRLKEESYHNVSSHIKILEEDE 1/2	
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Db 1163 IESNFEERYSTFLIESEGAISK-IRDEIYKTLTSNDENLOIKISE 1206	
116	
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FELKVKDLTDDG	
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GLOLFSHGK	
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XLKDFKIESEDILNNFKSDLNEFIES	
FORAT DIDET DAY	
KDMSYSQSDEAILGIKEFINROTEIIKDXSYFMIFDI NYZE	
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IKVSSEELLSSATLKIESLEKDVN	
QKKALDMHGS	
OIOXDXGIELSESVENDISDUI =	

0y 0	Db M	ACC OS	Db Db Db Db Db Db Db RESUL
442 SKEEKEILNELQMEATEVEKLFGRALPIRKLRMALAPHSNFLANHETIKYYVGSKLPGHK 501	Query Match 1.9%; Score 143.5; DB 5; Length 1558; Best Local Similarity 17.9%; Pred. No. 3.5; Matches 206; Conservative 153; Mismatches 377; Indels 413; Gaps 50; 347 SIIPNLOK-AAKSVGRDENNFITTDNSCGPEPPLVERLEKTAEEG 390	096275 PRELIMINARY; PRT; 1558 AA. 096275; 01-MAY-1999 (TIEMBLrel. 10, Created) 01-MAY-1999 (TIEMBLrel. 10, Last sequence update) 01-MAY-1999 (TIEMBLrel. 10, Last sequence update) 01-MAY-1999 (TIEMBLrel. 10, Last sequence update) RESA-H3 ANTIGEN. PFB0915W. PFB0915W. PB0915W. PLASMODIUM falciparum. Eukaryota; Alveolata; Apicomplexa; Haemosporida; Plasmodium. [1] SEQUENCE FROM N.A. SACUENCE FROM N.A. GARDNER M.J., TETTELIN H., CARUCCI D.J., CUMMINGS L.M., ARAVIND L., KOONIN E.V., SHALLOM S., MASON T., YU K., FUJII C., PEDERSON J., SHEN K., JING J., ASTON C., LAI Z., SCHWARTZ D.C., PERTEA M., SALZBERG S., ZHOU L., SUTTON G.G., CLAYTON R., WHITE O., SMITH H.O., FRASER C.M., ADDMS M.D., VENTER J.C., HOFFMAN S.L.; "Chromosome 2 sequence of the human malaria parasite Plasmodium falciparum."; Science 282:1126-1132(1998). EMBL; AE001424; AAC71972.1; SEQUENCE 1558 AA; 175658 MW; D49C2605 CRC32;	1582 IFNVKIGLESFKDGFEIKABEIFSNLQNEAKKIEQSVHLDFKNIGE-SLNLKVLDLEKFV 1640 1212 RSAVQKFVQDPNQPGVLYNHDNEYLHYQDDWYILSSKIENKPE 1254 1641 DFKLEKIDEKVNKTEDILIQAEVKFLTQQKDLEDKIFELNQKLEHEFTTLSSNLDKVRR 1700 1255 DYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELEKAAKSIGRD 1301 1:
RESULT 15 Q9ZLV0 ID Q9ZLV0 ID Q9ZLV0; AC Q9ZLV0; DT 01-MAY-1999 (TrEMBLrel. 10, Created) DT 01-MAY-1999 (TrEMBLrel. 10, Last sequence update) DT 01-MAY-1999 (TrEMBLrel. 10, Last annotation update) DT 01-MAY-1999 (TrEMBLrel. 10, Last annotation update) DE CAG ISLAND PROTECT. OS Helicobacter pylori J99. OC Bacteria; Proteobacteria; epsilon subdivision; Helicobacter group; OC Helicobacter. RN [1] RP SEQUENCE FROM N.A. RC STRAIN-J99; RA ALMR RA., LING LS.L., MOIR D.T., KING B.L., BROWN E.D., DOIG P.C., RA SMITH D.R., NOONPN B., GUILD B.C., DEJONGE B.L., CARMEL G.,	Qy 1293 KAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGERIIVKEVEE	1158 SLEVEEEKKLEEVHELKEEVHHIISGDAH	Qy 674 VSRKKCVPRKSDVGDFPVPDPSVLVQKFDMKDFSGKWFITRGLNPTFDAFDCQLHEFH 731

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ZLVO PRELIMINARY; PRT; 1819 AA.

IZLVO;

-MAY-1999 (TrEMBLrel. 10, Created)

-MAY-1999 (TrEMBLrel. 10, Last sequence update)

-MAY-1999 (TrEMBLrel. 10, Last annotation update)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                33 NEYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELE 1292
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            3 ISLAND PROTEIN.
licobacter pylori J99.
steria; Proteobacteria; epsilon subdivision; Helicobacter group;
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icobacter
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NVLKQNQDFFSKVKNFVKKYKVFAAPFISAVAA 1445
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LGI 980 NEA 994	DVLDGLKMEATEVE-KLFGRALPIRKLMAVATHCFTSPCHDRIRFFSSDDGIGR	925 945	Db Qy
LEN 944	E-BEVEN WUREVILLESALE EGENEL	888	da A
EA 8	ESVKAYKDCVSRARNEKEKQECEKLLTPEARKLLEESKKSVKAYLDCVSKAK	່ ພ	b B
EEI 883	VERLEKKVEEG	831	Qγ
EEA 831	EKEKQECEKLITPEARKILEES-KKSVKAYLDCVSKAKNEAERKECEKLITPEARKILE	773	Дb
ESI 830	EYLLYQDDWYILSSKVENSPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLE	773	Qy
J ,	SKAKNEAERKECEKLLTPEARKLLEEAKKSVKAYKDCVLRA	N 1	Db 4
	CEKNAKTUEERRECIKULT	7 2 3	9. 00
DA 72	VDEFNECAVSRKKCVPRKSDVGDEPVPDPSVLVQKFDMKDESGKWFITRGI	00	, Qy
68		Ν	Db
FE 66	LKECRLELAKCISNPACAANVACLQTCNNRPDETECQIKCGD	\vdash	Qy
CTC 616	CKFPKDVA	571 575	Dy Oy
KES 574	PEAKKLLENQALDCLKNAKTDEERKECL-KNLPKDLQSDILA	516	Db
NSG 570	PRICCGLDSRGLQLFSHGKHNLSPAHSINQNVPKG	524	Qy
SSR 523	VGSKLPGHKRFSWGWEDYFGSIVVAKIC : ;	464 470	QУ
6	ECLKLINDPEIREKFRKELELQKELQEYKDCIKNAKTEAEKNECLKGLSKEAIE	<u> </u>	Db !
4	KEVEKVRDTEM-TLFQRLLEGFKELQQDEENFVRELSKEEK-EILNELQMEATEVE	0	Qy
EEV 405 EER 411	SVGRDFNNFITTDNSCGPEPPLVERLEKTAEEGEKLLIKEAVEIEI :	358	Qy Qy
 0 0 0 0 0 0 0 0 0 	NIAEIEDKNPLRAFYECISNGGNYEECLKLIKDKKLQD	312	Дb
AAK 357	ENKPDDYIFVYYRGRNDAWDGYGGSVIYTRSPTLPESIIPNLQK	298	VΩ
EFL 297	FDAFDCQLHEFHMENDKLVGNLTWRIKTLDGGFFTRSAVQTFVQDPDLPGALYNHDNI : : : :: :	238 274	ОУ
274	LFSRSIFHYFVPLEDKSSRFS-KDRNLYVND	244	DЪ
PT 23	FENSVVDQFNECAVSRKKCVPRKSDVGEFPVPDRNAVVQNFNMKDFSGKWYITSG	7	Qy
Gaps	atch 1.9%; Score 142.5; DB 2; Length 1819; cal Similarity 19.0%; Pred. No. 4.9; 267; Conservative 199; Mismatches 524; Indels 417;	uery Mate est Loca latches	Qu Be
Human	mnic Sequence Comparison of Two Unrelated Isolates of the H ric Pathogen Helicobacter pylori."; re 397:176-180(1999). ; AE001481; AAD06047.1; ENCE 1819 AA; 207505 MW; 8809F345 CRC32;	"Genomic Gastric F Nature 39 EMBL; AEC SEQUENCE	RT RT DR SQ
G.F.,	J., CARUSO A., URIA-NICKELSEN M., MILLS D.M., MERBERG D., MILLS S.D., JIANG Q., TAYLOR D.E.	TUMMINO GIBSON F	RA RA

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1388	DEEKRKCQNLYSDLIQEIQNKKAQNKQNQLSKTERLHQASECLDNLDDFTDQEAIEQ	1332	Вp
1391		1355	Qy
1331	RQQKDKAIKDCLKNADPNDRAAIMKCLDGLSDEEKLKYLQEAREKAVLDCLKTART	1276	DЪ
1354	AKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGEERIIVKEVEEIEEEVEKEVEKVGRT	1295	Qy
1275	PEARKLLEQEVKKSVKAYLDCVSRARNEKEKQECEKLLTPEARKFLEKQ	1227	Db
1294	QDDWYILSSKIENKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELEKA	1239	Qy
1226	KDCECEKLLT	1206	ф
1238	-DCQLHEFHTEGDNKLVGNISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLYNHDNEYLHY	1180	Qy
1205	KSVKAYLDC-VSKAKNEAEKKECEKLLTPEARKLLEEAKESVKAY	1162	Dβ
1179	NISDENGKWYITSGLNPTFDAF	1121	Qy
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1121	ACLLKGCRIELAKCIANPACAANVACLQTCNNRPDETECQIKCGDLFENS-	1071	Qy
1101	TPEARKLLEQEVKKSVKAYLDCVSRARNEKEKQECEKLLTPEARKLLENQALDCLKNAKT	1042	ДЪ
1071		1041	Qy
1041	ERKECEKLLTPEARKLLEEAKESVKAYKDCVSRARNEKEKQECEKLL	995	DЪ
1040	TRKRINGTFLLKILPPIQSADLRTTGGRSSRPLSAFRSGFSKGIFDIVPLPSKNELKELT	981	Qy

Search completed: October 13, 1999, 22:44:45 Job time: 703 sec

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3810 Toxopi	5381	37	8	2.9	S	28
006371 Homo	0637	34	2040	2.9	5	27
2/414 HOMO	2741	34	1286	2.9	σ	26
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Bugos,R.C. and Yamamoto,H.Y.
Direct Submission
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U34817.1 GI:1463122
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                                                                              Bugos,R.C., Hieber,A.D. and Yamamoto,H.Y. xanthophyll cycle enzymes are members of the lipocalin family, the first identified from plants J. Biol. Chem. 273 (25), 15321-15324 (1998)
                                                                                                                                                                                                   Nicotiana tabacum Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Eukaryota; Viridiplantae; Streptophyta; eudicotyledons; core euphyllog; ytes; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Asteridae; euasterids I; Solanales; Solanaceae;
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EKKVEEGERTIIKEVEEIEEVEKVRDKEVTLFSKLFEGFKELQRDEENFLRELSKEE
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                                                                                                                 TTTTTGGGCGTGCTTTACCAATAAGGAAATTAAGGTAAGTATTTTTAAAACTATCAACAT
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                                                                                                                             taagggaaattcaggatgcaaatttccaaaagatgtagctttgatggtttgggagaaatg 376
tgatgcggttgatgctctcaagacttgtacttgcttactgaaagagtgcaggttagagct 496
                                  GAGACAATTCATACAATTGGCTATCGTATTGGTTTGCACATTTGTTATCGTTCCCAGAGT 602
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Bugos,R.C. and Yamamoto,H.Y.
Molecular cloning of violaxanthin de-epoxidase from romaine lettuce and expression in Escherichia coli proc. Natl. Acad. Sci. U.S.A. 93 (13), 6320-6325 (1996)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Eukaryota: Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; euphyllophytes; Spermatophyta; Magnollophyta; eudicotyledons; core eudicots; Asteridae; euasterids II; Asterales; Asteraceae; Lactuca
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235. .609
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TCNNRFDETECOLKCGDLefensVVDQFNBCAVSRKCVPRKSDVGEFPVPDRNAVVQN

PNMKDFBGKMYITSGLMPTEDAPDCOLHEFHMENDKLVGNLTMRIKTLDGGFFTRSAV

GTFVQDPDLPGALYNHDNEFLHXDDMYILSSQIENKFDDYIFVYYRGRUDANDGYGG

SVIYTRSBTLPESIIPNLOKAAKSVGRDFNNFIITDNSCGPEPPLVERLEKTAEEEGEK

SVIYTRSBTLPESIIPNLOKAAKSVGRDFNNFIITDNSCGPEPPLVERLEKTAEEEGEK

SLIKEANEIEEEVEKEVEKEVEKENDTEMTLFORLLEGFKELOQDEENFVRELSKEEKEILN
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235. .1656
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /product="violaxanthin de-epoxidase precursor"
/protein_id="AAC49373.1"
/db_xref="pID:91438875"
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TIGTICCATCTGCAGATGCAGTTGATGCACTTAAAACTTGTGCATGCTTATTGAAGGGAT 423
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Submitted (02-AAN-1995) Robert C. Bugos, Plant Molecular
Physiology, University of Hawaii, 3190 Maile Way, Honolulu,
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Bugos,R.C. and Yamamoto,H.Y.
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I (bases 1 to 1555)

Bugos,R.C., Hieber,A.D. and Yamamoto,H.Y.

Xanthophyll cycle enzymes are members of the lipocalin family, the first identified from plants
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NSIIPELEKAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGERIIVKEVEEIEE
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                                                                                                                    1384 AGGTTGAAAAATTGTTTGGGAAAGCTTTGCCAATCAGGAAGGTCAGGTAGAAACAAGAAC 1443
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                                                                                                                                                                                       1324 TGAGAGAGTTAAGTAAAGAAGAGATGGAGTTTTTGGATGAGATCAAAATGGAAGCAAGTG
                                                                                                                                                                                                             1264 CCTIGTTCCAGAGATTGGCTGAAGGATTTAATGAACTGAAGCAAGACGAGGAGAATTTCG 1323
                                                                                                                                                                                                                                                                                                                                                                                                                 1084 GCATAGGCAGAGACTTCAGCACATTCATTAGAACGGATAACACATGTGGTCCTGAACCTG 1143
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             664 TCAACATCTCGGACTTTAACGGGAAGTGGTACATTACAAGTGGCTTGAATCCAACCTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                604 CTAGAAAATCTGATCTCGGAGAATTTCCTGCCCCAGACCCTTCTGTTCTTGTACAGAACT
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                                                                                                                                                                                                                                                                                                                          TTGAAGAGATAGAAGAAGAGGTAGAGAAGGAAGTGGAAGGTCGGTAGGACTGAGATGA 1263
                                                                                                                                                                                                                                                                              cottattcagtaaactgtttgaaggttttaaagagctccaacgagatgaagagaacttct 1368
                                                                                                                                                                                                                                                                                                                                                 CGCTCGTGGAGAGAATTGAGAAGACAGTGGAAGGAAGGTGAAAGGATAATCGTAAAAGAGG 1203
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     acacaagaagtgcagttttgcctgaaagcattataccggagttgcaaaccgcagctcaaa 1140
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Submitted (08-JAN-1998) Arabidopsis thaliana Genome Center, Department of Biology, University of Pennsylvania, 38th Street Hamilton Walk, Philadelphia, Pennsylvania 19104-6018, USA
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Submitted (18-APR-1998) Arabidopsis thaliana Genome Center, Department of Biology, University of Pennsylvania, 38th Street and Hamilton Walk, Philadelphia, Pennsylvania 19104-6018, USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (bases 1 to 133840)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (bases 1 to 133840)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (bases 1 to 133840)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             18,
                   /organism="Arabidopsis thaliana"
/db_xref="taxon:3702"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   , 1998 this sequence version replaced gi:2809231.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                              QDITDGINKSAKAVQAAEAGIKQIGTLAQQQTLSMIEERANLPEISLQPVVAGAAEKT
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     join(188.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /chromosome="
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /clone="F22013"
                                                                                                                                                                                                                                                                                                                                                                                                     SHAIGSATKRLMNIITGGNKDED"
join(1384...1462,2003.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /evidence=not_experimental
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /note="unknown"
                                                                                                                                                                                                                                                                                                                                                        /note="putative plastid RNA polymerase sigma-subunit;
LMAVLLSPKPPRSLDQKIGMNQNLKPSEVIADPEAVTSEDILIKEFMRQDLDKVLDSI
                                                                                                                                                                                                                                                                                                             /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (1999)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     .133840
                                                                                                                                                                                                                                                                                                                                                                  .3690, .362, 2003. .2184, 2418. .3014, 3460. .3690, .3942, 4029. .4229, 4332. .4619)
                                                                                                                                                                                                                                                                                                                                   to EST gb(N65838"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     .318,504. .604,730. .875)
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join(5385.
6797. .731
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /evidence=not_experimental /product="p22013.5" /protein_id="April4032.1" /protein_id="April4032.1" /db_xref="pID:93063444" /db_xref="GI:3063444"
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PPIQSADLRTTGGRSSRPLSARRSGESGIFDIVPLPSKNELKELTAPLLLKLYGVLA
PPIQSADLVTUGRENGENELKELGERIELAKCI ANPACAANVACLOTCUMRRDETECO
QAFLIVPSADAVDALKTCACLLKGCRIELAKCI ANPACAANVACLOTCUMRRDETECO
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1KCGLLFENGEVERKELVGRISGEFFTRSAVQKFVQDPNQPG
TSGLNPTFDAFDCQLHBEHTEGDNKLYGNISWRIKTLDSGFFTRSAVQKFVQDPNQPG
TSGLNPTFDAFDCQLHBEHTEGDNKLYGNISWRIKTLDSGFFTRSAVQKFVQDPNQPG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /protein_id="AAC14029.1"

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      VLYNHDNEYLHYODDWYILSSKIENKPEDYIFVYYRGRNDAWDGYGGÂVVYTRSSVLP
NSIIPELEKAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGGRIIVKEVEELEE
EVEKEVEKVGRTEMTLFQRLAEGFNELKODEENFVRELSKEEMEFLDEIKMEASEVEK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (U44133); similar to EST gb|N37612"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             #2RNSRKWMCTGTIVLLITITVVIPITITSESS"

join(10982. 11218,11470. 11646,11732. 11896,11987. .12
/note="putative thioredoxin; similar to ESTs gb|T46281,
gb|R83933, gb|N65879, emb|E14466, gb|N96726, gb|AA042340,
and emb|Z18150"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /product="F22213.4"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /note="syntaxin-related protein knolle (U39451); BAC 522013 has a deletion of a cytosine at position 7887
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              complement(7701.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LFGKALPIRKVR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  product="F22013"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /evidence=not_experimental
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               YDAAKEIEKSLLELHQVFLDMAVMVESQGEQMDEIEHHVINASHYVADGANELKTAKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LSSELEEAEYVKAEMGLISETLARIEQYHEESKGVHKAESVKSLRNKISNEIVSGLRK
KKSIKSKLEEMDKANKEIKRLSGIPYYRSRTAVTNGLRKKLKEVMMEFQGLRQKMMSE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           YKETVERRYFTVTGEHANDEMIEKIITDNAGGEEFLTRAIQEHGKGKVLETVVEIQDR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /evidence=not_experimental
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           complement(join(13219. .13280,13397. .13477,13866
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EKELVALAANKELNFTYTPKPVPVEKEAATPDSNPSLPVPLPSMSSNDEKTLVSAGR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SAQELVDSLINAGDKLVVVDFFSPGCGGCKALHPKICQFAEMNPDVQFLQVNYEEHK
SMCYSLGVHVLPFFRFYRGSQGRVCSFSCINATIKKFRDALAKHGPDRCSLGPTKGLE
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LKSQKPLRSVFYGKQIVFGDSQDESFRRSSAITAQTTLRIGTAQKWWEKGLKDNNKEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /translation="MNDLMTKSEMSYVDLKKAAMKDMEAGPDFDLEMASTKADKMDEN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                codon_start=J
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /codon_start=1
                                                                                                                                                                                                                                                                                       ORKILIRKWRREQKDMYEKGLVTHEDVEMASAQAASEDSKKSPRKFSVKKSLKLNKLNN
KGKKKKNQKASGEKSADCMLE"
                                                                                                                                                                                                                                                                                                                                                                                                                                                               /evidence=not_experimental /product="F22013.6"
                                                                                                                                                                                                   nil) (U77888)"
                                                                                                                                                                                                                                                                                                                                                                                                    /protein_id="AAC14030.1"
/db_xref="PID:g3063442"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /codon_start=1
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                                                                                                               /evidence=not_experimental
/product="F22013.7"
                                                                                                                                                                                                                            /note="similar to receptor-like protein kinase (Ipomoea
                                                                                                                                                                                                                                                                 16782
                                                                                                                                                                                                                                                                                                                                                  /db_xref="GI:3063442"
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/translation="MAIPRLFFLFYYIGFALFPFVSSETFQNSEQEILLAFKSDLFDP
                                                                                                                                                                          /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        .14274))
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             .5600,5678. .5844,6110.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             .8633)
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CDS

CDS

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6484 TACAAGTEGETTGAATCCAACCTTTGATGECTTCGACTGCCAGGTGCATGAGTTCCACAC 6543
                                                                                                                                 6424 AGACCCTTCTGTTCTTGTACAGAACTTCAACATCTCGGACTTTAACGGGAAGTGGTACAT
                                                                                                                                                                                                                                                                       6364 TGCTGTGTCGAGAAAAAAGTGTGTTCCTAGAAAATCTGATCTCGGAGAATTTCCTGCCCC 6423
                                                                                                                                                                                                                                                                                                                                                                                                        6304 ATATCAGATTAAATGTGGGGATCTGTTTGAGAACAGTGTTGTTGATGAGGTCAACGAGTG 6363
                                           758 tactogoggtttgaatoccacttttgatgcttttgattgccaattgccatgcgttccatac 817
                                                                                                                                                                         698 tgatcccagtgttcttgtccagaagtttgacatgaaagattttagcggggaaatggttcat 757
                                                                                                                                                                                                                                                                                                                                    638 tgcagtctcccgaaagaaatgtgtacctcgtaaatctgatgttggtgactttcctgtacc 697
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  578 atgtcagataaaatgtggtgatttgtttgaaaacagtgtcgtagacgagttcaatgagtg 637
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           703;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TLNHLQVKEEDDITCDRYLOLRLKRKRRKKRSKQVIRCAAENMDDDSYYLDGNNTTPN
FAKDQVKSPETSTQVHNSEVNIEENGNFSNSDVDKMTSTHINVDAKRDDSQNPANNF
RCTACNKVAVEVHSHPLLEVIVCMDCKRSIEDRVSKVDDSLERHCEWCGHIADLIDCR
TCEKLFCASCIKRNIGEEYMSEAQSSGWDCCCCSPIPLQRLTLEKAMRDKKSIELS
SDSSSDSSDNNSVDTDADVNVTISKKKKKKIRRIIDDABLIGKDTRKIAIEKARQ
ERLRSLOFSARVKTISSMGDVKSIPEGAEVEVLGDAHBGYIVNVVREIGEEAVRVPRS
RCVDLGLKTALIVTPVNVLHNWRSEFEKWMDSEVKPLRIFMIGDVSHERRFDLLTKMR
RCVDLGLKTALIVTPVNVLHNWRSEFEKWMDSEVKPLRIFMIGDVSHERRFDLLTKMR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            YGFSDGRTDERMRKNFFAAYQVLAQILNHPGIPQLRSEDSKNGRRGSIVDIPDDCSSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            QALKOVKCORRIALTGSPLQNNLMEYYCMVDFVREGFLGSSPEFRNRQSFNCGSPYLO
LPKSNRKRTAYEFNCGGCFVQRMDMNVVKKDLPPKTVFVISVKLSPLQRILYQRFLEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              OLDGAGIELPKLYEMIESOAPNGCYTEAWKORAHWYGTOVTKETVESLANAERFILHTH RPYRKRHGKLLEEGASGFLEKKLADGAVKESLAGTSELDWSSLMKYFSEKKDESVSFIG SKOWASYTLASTPHQAAAMGLEFPGVNEVIFSIMPLYFLITVLMLMMIGICLHLLIFVA PRKKALNVTSPFLDRLLAVRLLKACVEEIEEIDASLADPFLADAIDNERELALTEEQ KTNYIRLSGIRRSTFEIITFSGCSLCSCFCGVGSKSIYMKYHLRLLTTPALPFNSFSM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KKGGVFLMGYTNFRNLSLGRGVKDLNAARGICNALRDGPDILVCDEAHIIKNTKADTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EVKARDGRGEONDVLMEENNNQGEOKDEEMQDASSRSESSDENSDEDEOILSRRDDEL
DLEVCIMDISCLLGGGIVVVYLIFLFSIIGOKPLSEEEIDELISDLLAVESKAAEAQE
ALEKESLSKVESEVREELAQALRGDELDEAVAAEMMTFKDEWEATLDELETESATLLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /product="F22013.8"
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/db_xref="PID:g3063446"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LLALRIALLCTAKLPKDRPSIRDVITMLABAKPRRKSVCQVAGDLPIFRNSPVVGLIT

join(22485. 22946, 23045. 23140, 23223. 22315, 23426. 236

23701. 244112, 24456. 24659, 24699. 24956, 25371. 25724,

26173. 26486, 26582. 26572, 265778. 26987, 27139. 27258,

27398. 27564, 27925. 28056, 88325. 280474, 28559. 28618,

28675. 28756, 28806. 29002, 29146. 29275, 29686. 29741,

29856. 30082, 30163. 30356, 30450. 30528, 30616. 30875,
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KLILENNSFSGOI PEEIFSCPTLVRVRIOKNHISGSIPAGSGDIPMLOHEELAKNNLI
GKIPDDIALSTSLSF IDISFNHLSSLSSSIFSSPNLOTFIASHUPPAGKIPNOIODR
SLSVIDLSFNHFSGGIPERIASE ELVSINKKNOLVGEIPKALAGMHMLAVIDLSN
SKIGNIPADLGASPTLEMLNVSFNKLDGPIPSNMLFAAIDPKOLVGNINGLGGVLPPO
SKIGNIPADLGASPTLEMLNVSFNKLDGPIPSNMLFAAIDPKOLVGNINGLGGVLPPO
YIFCKKPREEWPRLVAPORLCFTAGOILSHIKESNIIGMGAIGIVKAAEVMREPLIT
YNYKEYNPNGNLGTALHSKDEKFILRDWISRYNVAVGVVQGLNYLHNDCYPPIIHRDLY
MYYEYNPNGNLGTALHSKDEKFILRDWISRYNVAVGVVQGLNYLHNDCYPPIIHRDIK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /db_xrefe="GI:3063446"
/translation="MEANEESLKGKIEKLEGKEVIVESKEDEMDIIIEENREAEQEVM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /evidence=not_experimental
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (U72937)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /note="similar to DNA dependent ATPase and helicase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LGVVLLELVTGKMPIDPSFEDSIDVVEWIRRKVKKNESLEEVIDASIAGDCKHVIEEM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SNNLQDWKRPENATTFSELVHCHWTGVHCDANGYVAKLLLSNMNLSGNVSDOIQSFPS
LQALDLSNNAFESSLPKSLSNLTSLKVLDVSVNSFFGTFPYGLGMATGLTHVNASSNN
FSGFLPEDLGNATTLEVLDFRGGYFEGSVPSSFKNLKNLKFLGLSGNNFGGKVPKVTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 YQNRLTGKLPRELGGMTSLVFLDLSDNQITGEIPMEVGELKNLQLLNLMRNQLTGIIP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ELSSLETIILGYNGFMGEIPEEFGKLTRLQYLDLAVGNLTGQIPSSLGQLKQLTTVYL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             27.0%;
67.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                JOSNLEARIADFGLAKMMLHKNETVSMVAGSYGYIAPEYGYTLKIDEKSDIYS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 428.4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Pred
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mismatches 231; Indels 106; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             No. 1.6e-79;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB 8;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 133840;
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• B Qy δõ 밁 Qy Db

Matches

Local

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Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; euphyllophytes; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae; eurosids II; Brassicales; Brassicaceae;
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                                                                  2429 CACCCACGAGGGAGAGTCTTGATAGTGCTGCTATTCTTCTTTGGCCTAACAAGCTTTCAT 2370
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/protein_id="aac49163.1"
/db_xref="pid:g1184167"
/db_xref="g1:1184167"
/db_xref="G1:1184167"
/translation="mndlmtksfmsyvdlkkaamkdmeagpdedlemastkadkmden
/translation="mndlmtksfmsyvdlkkaamkdmeagpdedlemastkadkmden
LSSfleeagyvkaemcliseflarieOyheesskovkslrnkisneivsglrk
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KKSIKSKLEEMDKANKEIKRLSGTPVYRSRTAVTNGLRKKLKEYMMEPOGLRKGMMSE
AKSIKSKLEEMDKANKEIKRLSGTPVYRSRTAVTNGLRKKKLKEYMMEPOGLRKGMSE
XKETVERRYFTYTGEHANDEMIEKIITDNAGGEEFLTRAIQEHGKKKLETVETIQDR
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/db_xref="taxon:3702"
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                                                                                                                                                                                                                                                                                                                                                           Walker,M., Shinn,P., Brooks,S., Buehler,E., Chao,Q., Dunn,P., Khan,S., Kim,C., Altafi,H., Araujo,R., Conn,L., Conway,A.B., Khan,S., Kim,C., Huizar,L., Kremenetskaia,I., Lenz,C., Gonzalez,A., Hansen,N.F., Huizar,L., Schwartz,J., Toriumi,M., Li,J., Liu,S., Luros,S., Rowley,D., Schwartz,J., Toriumi,M., Li,J., Liu,S., Luros,S., Rowley,D., Schwartz,J., Toriumi,M., Li,J., Liu,S., Luros,S., Rowley,D., Schwartz,J., Theologie a
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Ecker, J.R.
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                                                                                               Submitted (02-MAR-1999) Arabidopsis thaliana Genome Center. Department of Biology, University of Pennsylvania, 38th St. Hamilton Walk, Philadelphia, Pennsylvania 19104-6018, USA
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                                                                                                                                                                                                                                                                                      Genomic sequence for Arabidopsis thaliana BAC T27G7 from chromosome
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1119 gagttgcaaaccgcagctcaaaaagttgggcgtgatttcaacacattcataaaaacagac 1178
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                                                                                                                           999 gaaaatagtccagaggattacatatttgtgtactataagggcagaaatgatgcatgggat 1058
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                                                                                               Local
                                                                                                                                                                                                                                                                                                                              Recombinant fowlpox virus
Patent: US 5670367-A 14 23-SEP-1997;
                                                                                                                                                                                                                                                                                                                                                       1 (bases 1 to 7218)
Dorner, F., Scheiflinger, F. and Falkner, F. Gunter.
                                                                                                                                                                                                                                                                                                                                                                                                    Unclassified
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 10.2%;
Similarity 77.8%;
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/db_xref="taxon:3702"
/chromosome="1"
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Pred. No. 1.5e-24;
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                                                                                                                   Kato A., Onaga H., Ueda S.;
"POLYPEPTIDE INDUCING IMMUNITY AGAINST LEUCOCYTOZOON PROTOZOAN AND RECOMBINANT DNA MOLECULE CODING THE POLYPEPTIDE";
Patent number JP 199508995-A/1, 04-APR-1995
DOUBUTSUYOU SEIBUTSUGAKUTEKI SEIZAI KYOKAI, NITSUSEIKEN KK.
                                                                                                                                                                                                                                                                                                                                                                                               JP 1995089995-A/1.
                                                                                                                                                                                                                                                                                                                                                                                                               DNA encoding a protein involved in Leucocytozoon phylaxis.
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07-OCT-1997 (Rel: 52, Last updated, Version 1)
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KATO ATSUSHI, ONAGA HIROST
                                                                                                                                                                      strandedness:
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                                                                                                                                                                                                                                                      Leucocytozoon caulleryi
                                                                                                                                                          copology: Linear
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       standard; RNA; UNC; 1686 BP,
   /organism="unidentified"
               /db_xref="taxon:32644"
                                               Location/Qualifiers
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                           .1686
                                                                                                                                                                    Double;
                                                                    /product="a protein involved in Leucocytozoon phylaxis"
                                                                                              /Organism="Leucocytozoon caulleryi"
/note="mRNA is derived from 2nd shizont"
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Local Similarity 52.3%;
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228201 Y13137
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Submitted (09-MAY-1994) Data collected by MIPS on behalf of the European yeast chromosome XI sequencing project MIPS at the European yeast chromosome XI sequencing project MIPS at the Max-Planck-Institut fuer Biochemie, Am Klopferspitz 18a D-82152 Max-Planck-Institut fuer Biochemies 18a D-82152 Max-Pl
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Guerreiro, P. and Rodrigues-Pousada, C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Maia e Silva, A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          saccharomycetaceae; Saccharomyces.
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                                                                                                                                                                                                                                                                                       /WLANCE "SWISS-PROT: P36042"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /organism="Saccharomyces cerevisiae"
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                                                                                                                                   /note="ORF YKL201c"
                                                                                                                                                               /gene="MNN4"
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                                                                                                                            REMARK
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Homo sapiens p160 mRNA,
                                                                                                                                                                                                                                                                                                                                                 Vadlamudi,R.K., Chung,J.K. and Shin,J. Cloning and expression of a cDNA for p160 a nuclear, proline rich protein that interacts with lck SH2 domain
                                                                                                                                                                                                                                                                                                                                                                                                                       Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       U88153.1
                                                                                                                                                                                                                                      Submitted (31-JAN-1997) Tumor Virology, Dana Institute. 44 Binney St., Norwood, MA 02115,
                                                                                                                                                                                                                                                                                        2 (bases 1 to 3811)
Vadlamudi, R.K., Chung
                                                                                                                                                                                                                                                                                                                               Unpublishe
                                                                                                                          Blvd., Houston, TX 77030, USA CDS extended by submitter
                                                                                                                                                            Submitted (29 MAY 1998) MD Anderson Cancer Center, 1515 Holcomb
                                                                                                                                                                                                      yadlamudi R.K.
                                                                                                                                                                                                                                                                              Direct Submission
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SKSMNGTICEQUTKIVHEEYVGKTIDLSESLKYRNESLFNITEGETGTTLDDNTEDYT
SKSMNGTICEQUTKIVHESYGKLIDLSESLKYRNESLFNITEGETGTDKDDRITELYYE
FANTVEVNPYDFKSNLNFSSNSFLDLNSYGLDLFAPTLSDVNRKGTQHFDKDPITYYE
FANTVEVNPYDFKSNLNFSSNSFLDLNSYGLDLFAFTLSDVNRKKKEEEEEKKKKEEEEEKKK
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HTYCLHNEYHVPDRYAFDAYKNTAYLP EFRFWFDYDGLKKCSNINSWYPNIPSLNSWN
PNLLKEISSTKFESKLFDSNKYSEYSFKNLSMDDVRLIYKNIPKAGFIEVFTNLYNSF
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/translation="Deplompikhlollsoyfnosliledprognoryfidvsdstīv
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RINGHOZNNIIDARFIDVDTGLYINMATINITELRDYITSDENKHRWYPTDTDLKDLLKKELE
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                                        /ce11
                                                        /db_xref="taxon
                                                                      'organism="Homo sapiens"
                                                                                                                Locat
/codon_start=1
                                                                                                                                                                                                                      1 to 3811)
                                                                                                              on/Qualifiers
                                        line="Hela"
                                                                                                                                                                                                                                                                                                  Chung, J.K. and Shin, J.
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Pred. No. 0.13;
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Submitted (31-JAN-1997) Tumor Virology, Dana Farber Cancer
                                                            Vadlamudi, R.K., Chun, Direct Submission
                                                                                                                                                             Unpublished
                                                                                                                                                                          p160.2 an isoform of proline and glutamic acid rich nuclear protein
                                                                                                                                                                                                                                      Vadlamudi, R.K., Chung, J.K. and Shin, J
                                                                                                                                                                                                                                                                    Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
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Similarity 54.6%;
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/product="p160"
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LLQLRQRFSGLARCLGLMLSSEFGAPVSVPVQEILDFICRTLSVSSKNIVSGICHLFR
ALAQDTRQPGKYWGPESPQTVSSWSPSQRASTFVQITSLPMCRDTGAQCCSVANASLG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      3121 bp
                                                                  Chung, J.K. and Shin, J.
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REFERENCE

JOURNAL AUTHORS

JOURNAL

REFERENCE

TITLE

SOURCE KEYWORDS ACCESSION

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HSU88154 RESULT

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                                                                                                                                     2501 AGGAA 2505 ·
                                                                                                                                                          1435 aaaaa 1439
                                                                                                                                                                 1315 toagtaaactgittgaaggttttaaagagctccaacgagatgaagagaacttcttaagag 1374
                                                                                                                                                                                                             2381 AAGAGGAAGAAGAACTTTGAGGAAGAGGAAGAGGATGAAGAGGAATATTTTGAAG 2440
                                                                                                                                                                                                                                                                         REMARK
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                                                                                                                                                                                                                                                        AUTHORS
                                                                                                                                                                                                                                                                                                                       / Match 3.2%; Score 50.6; DB Local Similarity 54.6%; Pred. No. 0.26;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CDS
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                        D83006
91752735
D83006.1 GI:1752735
Saccharomyces cerevisiae (strain:S288C) DNA
                                                       Saccharomyces cerevisiae MNN4 gene, complete cds
                                                                              D83006
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence update by submitter
On May 29, 1998 this sequence version replaced gi:2444070.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Submitted (29-MAY-1998) MD Anderson Cancer Center, 1515 Holcomb Flyd., Houston, TX 77030, USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Vadlamudi, R.K.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Institute, 44 Binney St., Norwood, MA 02115, USA 3 (bases 1 to 3121)
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                                                                                                                                                                                                                                                                                                                  Conservative
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GTAGGEVEEGAPPPTLPPALPPPESPPKVQPEPEPEGILLEVEEEGEDTEEERGADTA
ETLAPEALPSGGEVEREGESPAAGPPPGELVEEEPSXBPTLLEEETEDGSDKVQPPPE
                                                                                                                                                                                                                                                                                                                                                                                TPAEEEMETETEAEALQEKEQODTAAMLADFIDCPPDDEKPPPPTEPDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /protein_id="AAC17709.1"
/db_xref="PID:g3168604"
/db_xref="GI:3168604"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /codon_start=1
/product="proline and glutamic acid rich nuclear protein
                                                                          4000 bp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /cell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /note="p160.2"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ballou, C.E., Kern, K.A. and Raschke, W.C. Genetic control of yeast mannan structure. Complementation studies
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Odani,T., Shimma,Y., Tanaka,A. and Jigami,Y. Cloning and analysis of the MNN4 gene required for phosphorylation of N-linked oligosaccharides in Saccharomyces cerevisiae Glycobiology 6 (8), 805-810 (1996)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Submitted (10-7AN-1996) to the DDBJ/EMBL/GenBank databases. Tetsuji Odani, National Institute of Bioscience and Human-Technology, Molecular Biology Department; Higashi 1-1, Tsukuba, Ibaraki 305, Japan (E-mail:wang@nibh.go.jp, Tel:0298(54)6212, Fax:0298(54)6220)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mannosylphosphate transfer to cell wall mannan is regulated by the transcriptional level of the MNN4 gene in Saccharomyces cerevisiae FEBS Lett. 420 (2-3), 186-190 (1997)
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Submitted (10-JAN
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                                                                                                                                                                                                                                                                        NINSTNAKKINKODVEFHHIRLEQEFVNIDQVUSLYKLEIEETDKETEDKDLYVLSPS
DEKEDASKKIEELEEOKKLYPDKFSAHNENYLNSLKNSVKTSPALQRKFFYEAGAVKO
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YNGMAFFWDDDDDLQMFIKHLQLLSQYFNQSLILEDPRQGNGRYFLDVSDSLTVFRING
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ETATLEDKVDDGLVNMATLNITELRDYITSDENKNHKRVPTDTDLKDLLKKELEELPK
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VRPEVYCLQARNYILTTQSHPLSISIIISDNSTYQVPLQTEKSKNLVQSGLLQEYIND
                                                                                                   LHNEYHVPDRYAFDAYKNTAYLPEFRFWFDYDGLKKCSNINSWYPNIPSINSWNPNLL
KEISSTKFESKLFDSNKVSEYSFKNLSMDDVRLIYKNIPKAGFIEVFTNLYNSFNVTA
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AKLLEERKREKKKEEEEEKKKKEEEEKKKKEEEEKKKKEEEEKKKKEEE
                                                                          EKKKQEEEEKKKKEEEEEKKKQEEGEKMKNEDEENKKNEDEEKKKNEEEEKKKQEEKNK
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                                                 KNEDEEKKKQEEEEKKKNEEEEKKKQEEGHSN"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /db_xref="SGD:L0001128"
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/db_xref="PID:d1012343"
/db_xref="PID:g1752736"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /organism="Saccharomyces cerevisiae"
∕strain="S288C"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /gene="MNN4"
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Matches 114; Conserv
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source
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                                                                                                                                                                                                                                         variations annotated may not be found in the sequence submission corresponding to the overlapping clone as we submit sequences with only a small overlap as described above.

This sequence was generated from part of bacterial clone contigs of human chromosome 22, constructed by the Sanger Centre chromosome 22 mapping group. Further information can be found at http://www.sanger.ac.uk/HGP/Chr22/

This sequence has been finished according to sequence map criteria as follows. An attempt is made to resolve all sequencing problems, such as compressions and repeats, but not necessarily within known annotated human repeat sequence elements (e.g. Alu). Where the sequence is ambiguous, there is an annotation using the 'unsure'
                                                             The true left end of clone 388M5 is at 1 in this sequence. The true right end of clone 388M5 is at 17756B.

388M5 is grown the library RPCI3 constructed at the Roswell Park Cancer Institute by the group of Pleter de Jong.

For further details see http://bacpac.med.buffalo.edu/ Vectoe:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           humquery@manger.ac.uk Clone requests: clonerequest@sanger.ac.uk On Feb 28, 1998 this sequence version replaced gi:2213438. IMPORTANT: This sequence is the entire insert of clone 388M5.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               During sequence assembly data is compared from overlapping clones where differences are found these are annotated as variations together with a note of the overlapping clone name. Note that the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g2916859
Z97055.1
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HUMAN DNA 'sequence from PAC 388M5 on chromosome 22. Contains a 60S
Ribosomal protein L1 like pseudogene, a chromosomal protein HMG-17
like gene, a sulfotransferase (Sulfokinase) like gene, a putative
GS2 like gene, a predicted CpG island, ESTs and STSs, complete
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (http://www.sanger.ac.uk/HGP/Chr22/) Sanger Centre, Hinxton, Cambridgeshire, CB10 18A, UK. E-mail enquires:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Submitted (06-FEB-1998) Chromosome 22 Project Group
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Direct Submission
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Eukaryota; Metazoa; Chordata; Vertebrata; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.

1 (bases 1 to 177568)
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297055
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                        "Ccation/Qualifiers
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51.8%;
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/organism="Homo sapiens' /db_xref="taxon:9606"

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /clone_lib="RPCI3" 318. .452
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /note="60S Ribosomal protein L1 like pseudogene; match: proteins P49626 Q28346 P09180 P36578 P50878 P49691 P084 P02385 002056 P49165 P14117"
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/clone="388M5"
                                                                                                                                       /note="AluJb repeat: matches 302. .1 of consensus" 17751. .18336
                                                                                                                                                                                                                    /note="AluSx repeat: matches 295. .1 of consensus" 17031. .17202
                                                                                                                                                                                                                                                                                                                                         14814
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              complement(12954. .13560)
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/note="AluSp repeat: matches 2.
11869. .11951
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incomplete repeat"
                                                        /note="MER42c repeat: matches 1185. .1386 of consensus" 19725. .20021
                                                                                             /note="L1PA16 repeat: matches 902.
19526. .19716
                                                                                                                                                                                                                                                                                                                                         /note="AluSx/g repeat: matches 34. .1 of consensus;
incomplete repeat"
14814. .14994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /note="AluSx repeat: matches 302. .38 of consensus;
incomplete repeat"
14625. .14710
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/db_xref="PID:e1319651"
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/note="Alusx repeat: matches 301. .2 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   'note="MIR2 repeat: matches 145.
                    /note="AluSx repeat: matches 300. .1 of
20086. .20184
                                                                                                                                                                                                                                                                                                                  /note="MSTD repeat: matches 217. .394 of consensus"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      'note="MIR repeat: matches 248. .71 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             note="MER1B repeat: matches 337. .1 of consensus"
/note="MER42c repeat: matches 1398. .1494 of consensus"
                                                                                                                                                                                                                                                                                                   15333
                                                                                                                                                                                                                                                                                                                                                                                                                    note="LIMB8 repeat: matches 553. .621 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          'note="AluSx repeat: matches 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /pseudo
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                                                                                                                                                                                               note="L1MB2 repeat: matches 915. .737 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                          'note="L1MD2 repeat: matches 553. .639 of consensus"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              .302 of consensus"
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                                                                                                                    .292 of consensus"
                                       consensus"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /note="AluSp repeat: matches 1. .303 of consensus" repeat_region 27255. .27552 /note="AluSp repeat: matches 1. .299 of consensus" prim_transcript complement(27604. .28546)
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/note="Alusx repeat: matches 294.
20545...20556 ....... matches 302.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /note="LIMC2 re
                                                                                                                                                                                                                                                                                                                                                                                 38058. .38192 of consensus" /note="FLAM_C repeat: matches 1. .133 of consensus" 38233. .38400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note="AluJo repeat:
incomplete repeat"
23546. .23845
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /note="AluSx repeat: matches 1. .302 of consensus"
34685. .34818
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /note="AluSq repeat: matches 297. .1 of consensus" 29644. .29759
/note="MLTIE repeat: matches 442. .568 of consensus"
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  /note="AluY repeat: matches 1. .301 of consensus" 40435. .42181 /note="L1 repeat: matches 3663. .5390 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 29138. .29432
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          35619. .35814
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33563. .33736
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          24838. 25133
/note="AluSx repeat: matches 1.
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23851. .23989
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                                                                40129
                                                                                                    /note="AluSx repeat: matches 1.
incomplete repeat"
40020. .40128
                                                                                                                                                                  /note="L1 repeat: matches 3062.
39770. .40006
                                                                                                                                                                                                                                           /note="AluJo repeat: matches 125. .302 of incomplete repeat" 38685. .39047
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /note="MIR2 repeat: matches 146. .59 of consensus"
33150. .33448
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        note="MIT1F repeat: matches 458. .541 of consensus" 9971. .30060
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ncomplete repeat"
                                                                                 /note="L1 repeat: matches 3573.
                                                                                                                                                                                                                          /note="L1 repeat: matches 2437.
                                                                                                                                                                                                                                                                                                                        /note="single clone sequence"
                                                                                                                                                                                                                                                                                                                                                                38233. .38400
/note="4 copies of 42 mer 88 % conserved"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /note="MIR repeat: matches 32. .236 of consensus"
37465. .37776
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        note="L1MC2 repeat: matches 817. .1075 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             'note="MIR2 repeat: matches 7. .146 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          note="L1MB1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  note="MIR2 repeat: matches 22. .141 of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              note="AluJo repeat: matches 302. .1 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             te="match: ESTS T95489 T95490"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        repeat: matches 12. .194 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      matches 140. .1 of consensus;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      matches 255. .199 of consensus;
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                                                                                                                                                                                     .3546 of consensus"
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                                                                                                                                               .237 of
                                                                                   .3686 of consensus"
                                                                                                                                                                                                                          .2810 of consensus"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ter Huurne,A.A., Muir,S., van Houten,M., van der Zeijst,B.A Gaastra,W. and Kusters,J.G.
Characterization of three putative Serpulina hyodysenteriae
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X73141.1 GI:511146
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S.hyodysenteriae gene
X73141
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Direct Submission
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/transl_table=11
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/db_xref="GI:511147"
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/note="flame" repeat: matches 4. .912 of consensus"
/note="18 copies of 2 mer 100 % conserved"
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IKNLURQFRNKDKATDVLTFPMGDINEGGDIVISYEMVVTRYSDEKIKKTVLKLIIHS
ILHLKOIHHNYTRKSLMENNKKMKELYKKVIKTIKENKS"
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/db_xref="taxon:159"
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pl01/Acidic basic repeat (ABRA) antigen.
plasmodium falciparum (individual_isolate Camp) DNA.
plasmodium falciparum
plasmodium falciparum
Eukaryota; Alveolata; Apicomplexa; Haemosporida; Plasmodium
                                                                                                                                                                                                                                                                                                                                                                            Plasmodium falciparum p101/acidic basic repeat antigen (ABRA) DNA,
Draft entry and computer-readable sequence [1] kindly submitted by
                         88298794
                                                                vacuole
                                                                                                            Primary structure of a Plasmodium falciparum malaria antigen
                                                                                                                                 Chulay, J.D.
                                                                                                                                                   Weber, J.L., Lyon, J.A., Wolf, R.H., Hall, T., Lowell, G.H. and
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LFSYLGRLPKRNEDIEYNGYSFTVVGKSGNIVTKIRIEKLKKDNTAKNKD"
1 236 c 344 g 711 t
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DAEEKNFSLKKILHKPLFVPISISLMELLKNFREKQIHJAMVVDEYGGFSGIVSMEDV
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/db_xref="PID:g511148"
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Search completed: October 14, 1999, 04:02:19 Job time: 4437 sec
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KFVKCEYCHEHTYVKGKKAPSDPOCADIKEECKELLKEKOGYDBSYTYLMDGFKSANNS
ANNGKKNAEEMKNLVNFLOSHKKLIKALKKNIESIONKKHLIVKNKSYNPLLLSCVK
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LLYKAYVSYKKRKAQEKGLPEPTVTNEEYVEELKKGILDMGIKLLFSKVKSLLKKIKN
KIFPKKKEDNONDTKSNEEPKVKAQENALGNUFPTEDSMYFKEEYYDDEDDDDMEVKVKKI
GVTLKKFEPLKNGNVSETIKLIHLGNKDKHIEAINNOLOIKOGLQAINNEDHDHEVKVKKI
GVTLKKFEPLKNGNVSETIKLIHLGNKDKKHIEAINNOLOIKOGLQAINNEDEEEKEKE
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GVTLKKFEPLKNGNVSETIKLIHLGNKDKKHIEAINNOLOIKOGLQAINNEDHDHEVKVKKI
GVTLKFENDOLOHOONEDHDHEFENDEEDTNEETSOONEDHDHEVKVKKI
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/db_xref="taxon:5833"
151. .2382
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/product="p101/acidic basic repeat antigen"
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score greater than or equal to the score of the result being printed,
and is derived by analysis of the total score distribution.
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DNA encoding plant violaxanthin de-epoxidase - used to modify the plant and to light sensitivity of a plant to light sensitivity of a plant to light sensitivity of a plant to light plant to light.

Sensitivity of a plant to light sense or instantial de-epoxidase of constructs are producted of constructs of constructs and antheraxanthin. When nucleic acids consider to season thin to zeaxanthin and antheraxanthin. When nucleic acids consider to laxanthin to zeaxanthin and antheraxanthin. The plant to sense or antisense orientation, can see also T66241. T66243), in sense or antisense orientation, can be used in genetic constructs, pref. also conty a plastid be used in genetic constructs, pref. also conty a plastid translocation sequence, to modify VDE levels in plants. Increased translocation sequence, to modify volerant of increased light and the plant being tolerant of increases. The plant being tolerant to disease. In the plant being tolerant to disease. The photosensitivity of a range of crops, trees and to the plant being tolerant to disease.
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Best Local :
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07-NOV-1996; U18291.
07-NOV-1995; US-006315.
06-AUG-1996; US-023502.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             photoprotection: transgenic plant; zeaxanthin: antheraxanthin; xanthophyll; lettuce; ss. Nicotiana tabacum L. cv. xanthi.
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Bugos RC, Rockholm DC, Yamamoto HY;
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                                                                                                                          121 ATAAAAGGTTTACCTGGGGTTGGGAAGATTACTTTGGTAGTATAGTCGTAGCAAAAATTT 180
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181
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                                                                                                                                   CCCTTGTTGAGAGGTTGGAGAAAAGTGGAAGAAGGAGAAAGGACGATCATAAAAGAAG 1250
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 361 TGGTTTGGGAGAAATGGGGCCAATTTGCCAAAACAGCAATTGTAGCTATATTCATTTTGT
                                                                  301 ttaaccagaatgtacctaagggaaattcaggatgcaaatttccaaaagatgtagctttga 360
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DNA encoding plant violaxanthin de-epoxidase - used to modify the sensitivity of a plant to light Claim 3; Fig 1; 41pp; English.

A CDNA clone (766241) codes for the 55 kDa violaxanthin de-epoxidase lettuce chlore(166241) codes for the 55 kDa violaxanthin de-epoxidase lettuce chloreplasts and 2 tryptic peptides were used to develop rimers (see also 766244-45), which amplified a partial VDE sequence. The amplified sequence was then used to screen a lettuce nucleic acids (see also 766242-43), in sense or antisense orientation, can be used in genetic constructs, pref. also contg. a plastid translocation sequence, to modify VDE levels in plants.
                                                                                                                                                                                                                          Bugos RC,
                                                                                                                                                                                                                                              07-NOV-1996; U18291.
07-NOV-1995; US-006315.
06-AUG-1996; US-023502.
                                                                                                                                                                                             P-PSDB; W09874
                                                                                                                                                                                                            (CALJ ) CALGENE INC.
Bugos RC, Rockholm DC, Yamamoto HY;
                                                                                                                                                                                                                                                                                                             W09717447-A2.
                                                                                                                                                                                                                                                                                                                                          mat_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                      misc_difference 226. ..227 ^{\prime} note- ^{\prime} bases 186-189 are illegible in Fig.
                                                                                                                                                                                                                                                                                                15-MAY-1997
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/note= "bases 26-29 are illegible in Fig 1"
misc_difference 66. 72
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            317 taagggaaattcaggatgcaaatttccaaaagatgtagctttgatggtttgggagaaatg 376
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                                                                                                                    ACTCCCCGAATCGACCATCCCAAACCTACAAAAAGCAGCCAAATCCGTGGGTCGAGACTT
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ggagaagaagtggaagaaggagaaaggacgatcataaaagaagttgaggagatagaaga 1276
                                        TAACAATTTCATAACAACCGACAATAGTTGTGGGCCTGAGCCTCCATTGGTGGAAAGGCT
                                                               caacacattcataaaaacagacaatacatgtggccctgaacctccccttgttgagaggtt 1216
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71.9%;
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15-MAY-1997.
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                                                                                                                                                                                                                                                                                                                   DNA encoding plant violaxanthin de-epoxidase - used to modify the sensitivity of a plant to light Disclosure; Fig 3: 41pp; English.

A cDNA clone (765243) codes for Arabidopsis violaxanthin A cPNA classe (VDE) (W09976), an enzyme that catalyses the de-epoxidation of violaxanthin to zeaxanthin and antheraxanthin. VDE nucleic acids (see also T66241-42), in sense or antisense or property of the sense of the 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Arabidopsis violaxanthin de-epoxidase cDNA.
Violaxanthin de-epoxidase: VDE; light; photosensitivity;
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xanthophyll; lettuce;
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28-JUL-1997
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07-NOV-1995; US-006315.
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                                                                                              increased levels result in the plant being tolerant of increased light and therefore more productive and/or more resistant to disease. Underexpression of VDE increases photosynthetic efficiency under low light. The photosensitivity of a range of crops, trees and ornamentals can be modified. Sequence 1555 EP; 485 A; 286 C; 375 G; 409 T;
                                                                                                                                                                                                                                                                         orientation, can be used in genetic constructs, pref. also contg-
plastid translocation sequence, to modify VDE levels in plants.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Bugos RC,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (CALJ ) CALGENE INC
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Rockholm DC,
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39.2%;
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Score 622.6; DB 1;
Pred. No. 1.9e-154;
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                              Length 1555;
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                                         1489 aactatcaacatatatactacat 1511
1444 CACCATTGTTGTACAAACTATAT 1466
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  544 tecagaettgeaacaatagaeetgaegaaaeggaatgteagataaaatgtggtgatttgt
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                                                                          AGGTTGAAAAATTGTTTGGGAAAGCTTTGCCAATCAGGAAGGTCAGGTAGAAACAAGAAC 1443
                                                                                                                   aggtagaaaaactttttgggcgtgctttaccaataaggaaattaaggtaagtattttaa 1488
                                                                                                                                                                    TGAGAGAGTTAAGTAAAGAAGAGATGGAGTTTTTTGGATGAGATCAAAATGGAAGCAAGTG 1383
                                                                                                                                                                                              CCTTGTTCCAGAGATTGGCTGAAGGATTTAATGAACTGAAGCAAGACGAGGAGAATTTCG 1323
                                                                                                                                                                                                                                                                                                      cettatteagtaaactgtttgaaggttttaaagageteeaacgagatgaagagaacttet 1368
                                                                                                                                                                                                                                                                                                                                                 TTGAAGAGATAGAAGAAGAAGGTAGAGAAGGAAGGTGGAAGGTCGGTAGGACTGAGATGA 1263
                                                                                                                                                                                                                                                                                                                                                                                        CGCTCGTGGAGAGAATTGAGAAGACAGTGGAAGAAGGTGAAAGGATAATCGTAAAAGAGG 1203
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               cccttgttgagaggttggagaagtggaaggaggaaggaggacgatcataaaggag 1260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GCATAGGCAGAGACTTCAGCACATTCATTAGAACGGATAACACATGTGGTCCTGAACCTG 1143
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 aagttgggcgtgatttcaacacattcataaaaacagacaatacatgtggccctgaacctc 1200
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TATTTGTATACTACCGTGGGCGAAACGATGCTTGCGATGGATATGGTGGTGCAGTTGTAT 1023
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AATTCGTGCAAGATCCTAACCAACCTGGTGTTCTCTACAATCATGACAACGAGTACCTTC 903
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             tctaccaagatgactggtatattttgtcatccaaagtagaaaatagtccagaggattaca 1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      aattcgtgcaagatccaaagtatccggggalactctacaatcatgataatgagtatcttc 960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ACATCTCTTGGAGAATAAAGACCCTAGACAGTGGATTCTTTACTAGGTCAGCCGTACAAA 843
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   atttatottggagaatacgtacacotgatggaggattttttactcgatcagcggtgcaaa 900
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AC DT DE KW KW OS FT FT FT FT PN PD PR PR PT PT
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                                   J09266792-A.

14-0CT-1997.

129-MAR-1996; J7-5667.

29-MAR-1996; JF-075667.

(AGEN ) AGENCY OF IND SCI & TECHNOLOGY.

WFI; 97-553460/51.

P-PSDB; W30763.
Positive regulatory gene of mannose-1-phosphate transfer in yeast useful for high mannose type neutral saccharide chain production
                                                                                                                                                                                                                   Mannose-1-phosphate transferase gene MNN4.
Mannose-1-phosphate transfer; MNN4 gene; enzyme; yeast; regulatory gene; human; high mannose type neutral saccharide chain; ss.
                                                                                                                                                                                                                 Saccharomyces cerevisiae.
                                                                                                                                                                                                                                                                           791902 standard; DNA; 4000 BP. 791902; 07-MAY-1998 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                               1398 gttttggatggacttaaaatggaagcaactgaggtagaaaaa 1439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Claim 1; Page 12-14; 20pp; Japanese.

Q87587-89 encode polypeptides having a whole or partial epitope of structural protein of Leucocytozoan protozoa (see R70491-93). The polypeptides and DNA encoding them are useful in the production of vaccines for the treatment of leucocytozoanosis of fowl.

Sequence 1686 BP; 915 A; 129 C; 382 G; 260 T;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1338 aaagagctccaacgagatgaagagaacttcttaagagagctgagcaaagaagaaatggat 1397
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1278 gaagtagagaaggtgagataaagaagtcaccttattcagtaaactgtttgaaggtttt 1337
                                                                                                                                                                                                                                                                                                                                                                                  406 GAAGATGAACAAAATGAAGATGAACAAAATGAAGAAGAAGAA 447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         WPI; 95-167252/22.

P-PSDB; R70491.

Immune inducing polypeptide against Leucocytozoan protozoa - use in production of vaccines for treatment of leucocytozoanosis in
                                                                                                                                                                                                                                                                                                                                                                                                                                           346 GAAGAAGAAGAAGATGAAGAAGAAGAAGAAGAAGAAGAACAAAATGAAGAAGAACAAAAT 405
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (DOBU-) DOBUTSUYO SEIBUTSUGAKUTEKI SEIZAI KYOKAI (NISS-) NISSEIKEN KK.
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10-SEP-1993; JP-226078
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19-DEC-1995 (first entry)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    leucocytozoan protozoa; structural protein; epitope; vaccine;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Local Similarity 52.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                9agaagaaagtggaagaaggagaaaggacgatcataaaagaagttgaggagatagaagaa 1277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ytozoan protozoa sp
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                                                                                                                                                                                    418. .3953
                                                                                                                                                      /product= MNN4
                                                                                                                                                                                                  Location/Qualifiers
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 52.4; DB 1; Length 1686; Pred. No. 0.00017;
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Matches
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This sequence represents the gene of the invention, designated MNN4, encoding a protein which positively regulates mannose-1-phosphate transfer in yeast. The gene is useful for the preparation of human high mannose type neutral saccharide chain.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1279 aagtagagaaggtgagagataaagaagtcaccttattcagtaaactgtttgaaggtttta 1338
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1219 agaagaaagtggaagaaggaggaaaggacgatcataaaagaagttgaggagatagaagaag 1278
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                                                                     This cDNA sequence encodes a novel p160 (160.1) which is capable of activating transcription of a variety of genes upon activation of p62 of activating transcription of a variety of genes upon activation of p62 and is capable of binding to the p62/p561pk complex to modulate Lck function in a manner similar to p62. The genes transcribed in response to function in amanner similar to p62. The genes transcribed in Tor B cell p160 activation likely include those of which are involved in Tor B cell development/differentiation. Tor B cell activation or production of Tor B cell specific factors e.g. lymphokines or antibodies. This p160 polypeptide is also a substrate for serine/threonine kinase activity. polypeptide is also a substrate for serine/threonine kinase activity cycle regulatory proteins stimulating expression of cell cycle dependent kinase inhibitors and arresting cell cycle progression at specific boundaries to thereby modulate cell proliferation. As p160 boosts B cell response it may be used to treat disorders where this is beneficial, e.g.
                                                                                                                                                                                                                                                                                                                                    cDNA encoding p52 and p160 and corresponding proteins - used in the treatment of autoimmune disease and for T and B cell proliferation, e.g. for treatment of tumours claim 82; Fig 8; 175pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           modulation; cellular response; cell proliferation; autoimmune disease;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Human p160 cDNA 160.1.
p160; p62; cytoplasmic; T cell;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           T89345;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            T89345 standard; cDNA; 3901
                                                                                                                                                                                                                                                                                                                                                                                                                                       (DAND ) DANA FARBER CANCER INST INC. Joung I, Shin J, Strominger JL, VWPI; 97-341351/31.
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11-DEC-1996; U19944.
19-DEC-1995; US-574959.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      11-MAR-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            WO9722255-A1.
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variety of autoimmune diseases, e.g. diabetes mellitus,
                infections by pathogenic microorganisms. pl60 can be used to expand T cell populations for treating infectious diseases or cancer and pl60 inhibitors could reduce B or T cell responses and may be used to treat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        aaaagaagaagaagaagaagaagaagaagcaggaagaaggagaaaaagatgaagaatg 3770
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              439. .3846
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Location/Qualifiers
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/note= "160.1"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 52;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    B cell; development; activation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           750 C;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Vadlamudi RK;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 multiple sclerosis allergic reactions, C: sequence 3901 BP; 781 A; 1183 C;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1315 tcagtaaactg::ttgaaggttttaaagagctccaacgagatgaagagaacttcttaagag 1374
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3161 AAGAGGAAGAGAAGAAGACTTTGAGGAAGAAGAAGAAGATGAAGAAGAATATTTTGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1435 aaaaa 1439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         3221
                                                                                                              This cDNA sequence encodes a novel p160 (160.2) which is capable of activating transcription of a variety of genes upon activation of p62 of activating transcription of a variety of genes upon activation of p62 activating transcription of a variety of genes upon activation of activation in a manner similar to p62. The genes transcribed in response to function in a manner similar to p62. The genes transcribed in Tor B cell p160 activation likely include those of which are involved in Tor B cell development/differentiation, Tor B cell activation or production of Tor B cell specific fluctors e.g. lymphokines or antibodies. This p160 polypeptide is also a substrate for serine/threonine kinase activity. Polypeptide is also a substrate for serine/threonine kinase activity. Polypeptide is also a substrate degradation of cellular proteins e.g. cell p160 polypeptides can modulate degradation of cellular proteins e.g. cell cycle regulatory proteins stimulating expression of cell cycle dependent kinase inhibitors and arresting cell cycle progression at specific boundaries to thereby modulate cell proliferation. As p160 boosts B cell response it may be used to treat disorders where this is beneficial, e.g. infortions.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           modulation; cellular response; cell proliferation; autoimmune
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            p160; p62; cytoplasmic; T cell; B cell; development; activation;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Homo sapiens.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        26-JUN-1997.
11-DEC-1996; U19944
19-DEC-1995; US-574
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                W09722255-A1
infections by pathogenic microorganisms. pl00 can be used to expand T cell populations for treating infectious diseases or cancer and pl00 inhibitors could reduce B or T cell responses and may be used to treat a variety of autoimmune diseases, e.g. diabetes mellitus, arthritis, multiple sclerosis allergic reactions, Crohn's diseases etc. sequence 3211 5P; 649 A; 990 C; 948 G; 624 T;
                                                                                                                                                                                                                                                                                                                                                                                                                   cDNA encoding p62 and p160 and corresponding treatment of autoimmune disease and for {\mathbb T} and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (DAND ) DANA FARBER CANCER INST INC. Joung I, Shin J, Strominger JL, VWPI; 97-341351/31.
                                                                                                                                                                                                                                                                                                                                                                                                                                                               P-PSDB; W31186
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                                                                                                                                                                                                                                                                                                                                                                               for treatment of tumours m 82; Fig 10; 175pp; English.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Location/Qualifiers
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Pred. No. 0
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Crohn's diseases
C; 1128 G; 8
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                                                                                                                                                                                                                                                                                                                                                                                                                         ing proteins - used in the and B cell proliferation,
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PT prodi. and diagnosis

PS Claim 20; Fig la-E; 69pp; French.

CC This sequence corresponds to the genomic sequence encoding a plasmodium CC falciparum strain K1 pre-erythrocytic liver stage antigen-3 (LSA-3) CC protein (W24790). The gene sequence was isolated by screening a contained of the serum from a missionary contained by prophylaxis (for strain T6/96 see FR9101286). Of 20 clones contained a clone 729s was used to screen a library generated from Thai CC strain K1. One clone contained a c.85 kb insert including the sequence contained here. The gene organisation comprises a first exon, a short concentrated here. The gene organisation comprises a first exon, a short concentrated from the second exon containing a 1.8 kb region encoding corresponding to a glycosyl-phosphatidylinositol membrane anchoring corresponding to glycosyl-phosphatidylinositol membrane anchoring corresponding to glycosyl-phosphatidylinositol membrane anchoring corresponding to glycosyl-phosphatidylinositol membrane anchoring correspondin
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Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                              Plasmodium falciparum poly:peptide(s) and related nucleic acids - derived from the liver stage antigen-3, useful for malaria vaccine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Daubersies P, Dru
WPI; 97-065464/06
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (INSP ) INST PASTEUR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          13-JUN-1995;
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77. 37/
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Pred. No. 0.00064;
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PT prodn. and diagnosis

PS Claim 20; Fig 2A-I; 69pp; French.

CC This sequence corresponds to the coding sequence for a plasmodium

CC falciparum strain K1 pre-erythrocytic liver stage antigen-3 (LSA-3)

CC protein. The gene sequence was isolated by screening a P. falciparum

CC protein. The gene sequence was isolated by screening a P. falciparum

CC strain T9/96 library with serum from a missionary treated by prophylaxis

CC used to screen a library generated from Thai strain K1. One clone

CC contained a 6.85 kb insert including the genomic sequence T78867.

CC acid repeats and a 3 hydrophobic region encoding 3 major blocks of 4 amino

CC glycosyl-phosphatidylinositol membrane anchoring sequence. The invention

CC relates to new polypeptides of at least 10 amino acids derived from the

CC peptides can be used to raise antibodies and as vaccines for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT
T78868
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            Sequence
                                                                                                                                                                                                                                                                                                                Plasmodium falciparum poly:peptide(s) and related nucleic acids -derived from the liver stage antigen-3, useful for malaria vaccine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         P. falliparum liver stage antigen-3 coding sequence.
Plasmodium falciparum; pre-erythrocyte; liver stage antigen; serum;
prophylaxis; Thai strain; gene organisation; exon; intron; hydrophob
glycosyl-phosphatidylinositol membrane anchoring sequence; antibody;
      equence 5361 Bp; 2:
                                                                                                                                                                                                                                                                                                                                                                   P-PSDB; W24790
                                                                                                                                                                                                                                                                                                                                                                                                             Daubersies P,
                                                                                                                                                                                                                                                                                                                                                                                                                         13-JUN-1995; FR-00700
(INSP) INST PASTEUR.
                                                                                                                                                                                                                                                                                                                                                                                       WPI; 97-065464/06.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                   12-JUN-1996;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Plasmodium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               08-OCT-1997 (first entry)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1461 ataaggaaattaaggtaagtatttttaaaactatcaacatatatactacatgtat 1515
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     T78868 standard; cDNA; 5361 BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1401 ttggatggacttaaaatggaagcaactgaggtagaaaaactttttgggcgtgctttacca 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        4283 GAATTAAAAACTATTGAAACAGATATTTTAGAAGAGAAAAAAGAAATAGAAAAAGATCAT 4342
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  4223 ATATTAAAAGAAGTAAAAGAAATCAAAGAACTTGAAAGTGAAATTTTAGAAGATTATAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1281 gtagagaaggtgagagataaagaagtcaccttattcagtaaactgtttgaaggttttaaa 1340
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1221 aagaaagtggaagaaggaaggacgatcataaaagaagttgaggagatagaagaagaa 1280
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   immunotherapy; malaria; ds.
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                                                                                                                                                                                                                                                                                                                                                                                                         Druilhe P;
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47.8%; Pre
    2388 A;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Mismatches 154; Indels
    431 C;
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1169 G;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 6152;
1373 T;
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Matches 141;

Conservative

0,

Mismatches

Local Similarity

3.1%; 47.8%;

Score 48.6; DB 1 Pred. No. 0.0026;

DB 1; 154;

Length 5361; Indels

0,

Gaps

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RESOLA TO SEA AC DE TO SEA AC D
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X20248_01

Continuation (2 of 10)

WP Sequence split into
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Best Local S
Matches 100
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                                                                                                                                                                                                                                           14-AUG-1996 (first entry)
Chicken leucocytozoan DNA encoding
Chicken leucocytozoan; immunogen; r
                                                                                                                                                                         Key
                                                                                                                                                                                                                                                                                                                        T05868
                                                                                                  misc_feature
                                                                                                                                                                                                Chicken
                                                                                                                                                                                                                          immunisation; vaccination; ss.
                                                                                                                                                                                                                                                                                              14-AUG-1996
                                                                                                                                                                                                                                                                                                                                              T05868 standard; DNA; 3399
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X20248_01

X20248_03

X20248_03

X20248_04

X20248_05

X20248_05

X20248_07

X20248_08
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ATATTAAAAGAAGTAAAAGAAATCAAAGAACTTGAAAGTGAAATTTTAGAAGATTATAAA
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100; Conserv
                                                                                                                                                                                                leucocytozoan
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1515
  /*tag= b
/note= "fragment referred to in the claims,
use as insert in a recombinant vaccine
against chicken leucocytozoan disease"
                                                                                             /*tag= a
1150. .3218
                                                                                                                                                                       Location/Qualifiers
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                                                                                                                                                                                                                                                   recombinant vaccine;
                                                                                                                                                                                                                                                                       immunogenic protein for vaccines
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X20248
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Best Local Similarity
Matches 111; Conserv
                                                                                                                                                               W08601802-A.
27-MART-1986.
11-SEP-1985; 006960.
11-SEP-1984; AU-007067.
11-SEP-1984; AU-007066.
11-SEP-1985; AU-047326.
10-SEP-1985; AU-047326.
(HALL-) HALL INST MED RES.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  vaccine against chicken leucocytozoan disease Claim 6; Page 6-9; 35pp; Japanese.
T05868 encodes a chicken leucocytozoan immunogenic protein, thi or a fragment of it can be used in a recombinant vaccine to immagainst chicken leucocytozoan disease. The DNA is used in a vecand operatively linked to an expression regulatory sequence as standard practice.

Sequence 3399 BP; 1577 A; 508 C; 798 G; 516 T;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (DOBU-) DOBUTSUYO SEIBUTSUGAKUTEKI SEIZAI KYOKAI (KITA ) KITASATO KENKYUSHO SH. WPI; 96-006311/01.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1218
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Chicken leucocytozoan immunogenic
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31-OCT-1995.
19-APR-1994; 080%43.
19-APR-1994; JP-080643.
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The inventors claim a novel DNA molecule which comprises a nucleotide sequence corresp. to all or a portion of the base sequence coding RESA (M60472) or FIRA (M60473). RESA and FIRA have antigenicity suitable for providing protective immunity against plasmodium falciparum malarial infections.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2773 GATGAGGAAGAAGAAGAAGAAGAAGAAGATGAGGAAGA 2813
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                                                                  falciparum
Claim 4; Fig 1; 55pp; English
                                                                                                              DNA
                                                                                                                                        Kemp DJ, Anders 3, Coppel
WPI; 86-094065/14.
                                                                                                                                                                                                                                                                                                                       Key
                                                                                                                                                                                                                                                                                                                                    Plasmodium
                                                                                                                                                                                                                                                                                                                                                   Malaria vaccine; antigen; epitope;
                                                                                                                                                                                                                                                                                                                                                                                             24-AUG-1991
                                                                                                                                                                                                                                                                                                                                                                                                        N60472;
                                                                                               poly:peptide(s) having
                                                                                                           SDB; P60569. coding for Piasmodium falciparum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     aaagagctccaacgagatgaagagaacttcttaagagagctgagcaaagaagaagaaatggat 1397
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  gttttggatggacttaaaatggaagcaactgaggtagaaaa
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                                                                                                                                                                                                                                                                                                                                                                          (first entry)
oding the ring-infected Erythrocyte
                                                                                                                                                                                                                                                                              /*tag=
1199.
                                                                                                                                                                                                                                                                                                          801.
                                                                                                                                                                                                                                                                 /*tag=
                                                                                                                                                                                                                                                                                                                       Location/Qualifiers
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                                                                                                                                                                                                                                                                                                          . 995
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y= b
                                                                                              ium falciparum antigens - expressing
antigenicity of RESA or FIRA antigens
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                                                                                                                                                   RL,
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                                                                                                                                                        Brown
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0.019;
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                                                             14-MAY-1998.
31-OCT-1997; U20016.
09-JUN-1997; US-049018.
04-NOV-1996; US-030279.
(SMIK) SMITHKLINE BEECHAM CORP
WPI; 98-286847/25.
P-PSDB; W72001, W72002, W72003, W72004, W72005, W72006
Herpes simplex virus type-2 sequences - useful in, e.g
                                         Esser KM,
                                                   Chan JY, Dabrowski-Amaral CE,
                                                                                                                       WO9820016-A1.
                                                                                                                                                          CDS
                                                                                                                                                                                                                                                                                                                                                                                  HSV-2 strain SB5; immunological response induction; the antiviral identification; viral protein inhibitor; ss.
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                                                                                                                                                                                                                         /product= "ORF#3 product= (4889.
                                                                                                                                                                                                                                                               /product= "ORF#2 protein" 4084. .4689
                                                                                                                                   /product=
                                                                                                                                                       complement (6523.
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/transl_except= (pos: 1.
/note= "Xaa= unspecified
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Pred. No. 0.045;
                                                   Delvecchio AM, Dillon
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                                                                 New isolated Borrelia burgdorferi nucleic acids - used to develop products for the detection, diagnosis, characterisation, prevention and therapy of infections, particularly Lyme disease Claim 1; Page 1028-1029; 1128pp; English.

X20248 to X20402 represent polynucleotide sequences isolated from Borrelia burgdorferi (Bb). Products derived from Bb can be used for the detection, diagnosis, characterisation, prevention and therapy of Bb infections, e.g. Lyme disease. They can also be used for the production of biosynthetic products, e.g. enzymes. Borrelia belongs to a family of motile, spiral shaped bacteria called Spirochetes spirochetes are pathogenic in humans and Borrelia causes epidemic and endamic rails are pathogenic in humans and Borrelia causes epidemic and endamic rails causes are real troops and content to common to the content of the content of the content of the causes and borrelia causes epidemic and endamic rails.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Borrelia burgdorferi polynucleotide sequence #51.
Borrelia burgdorferi; spirochete; bacterium; pathogen; epidemic relapsing fever; Lyme
  Sequence
                                Lyme disease
                                            endemic relapsing fever, and Lyme borreliosis, more commonly known
                                                                                                                                                                                                                                                                                                                                                                                                                                    White
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22-JUL-1997;
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20-JUN-1997; US-050359.
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18-JUN-1998; U12764.
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This sequence represents a Herpes simplex virus type-2 (HSV-2) DNA sequence of the invention. This sequence was isolated from HSV-2 strain SB5 (deposited as ATCC VR-2546), is designated Contig ID 100, and encode 6 HSV-2 proteins. The proteins can be used for the treatment or prevention of disease, to induce an immunological response in a mammal of the content of the co
                                                                                                                                                                                                                                                                                                                                                                                                WPI; 99-081217/07.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (MEDI-) MEDIMMUNE INC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (HUMA-) HUMAN GENOME SCI INC
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            response in a mammal. Sequence 8952 BP;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             mammal
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Local
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US-053377.
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  1021 A;
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Pred. No. 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                  C, Lathigra R, Smith
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  241 C;
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453 G;
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N J10057066-A.

PN J10057066-A.

PD 03-MAR-1998.

PF 19-AUG-1996; 217154.

PR 19-AUG-1996; JP-217154.

PR 19-AUG-1996; JP-217154.

PR 19-BUG-1996; JP-217154.

PR WPI; 98-254323/23.

PM WOUSE PIG receptor protein gene - used for preparing gene knockout mice, useful for study of human poly Ig receptor protein deficiency claim 1; Page 4-14; 18pp; Japanese.

CC The present sequence represents the mouse poly Ig receptor protein cc gene, which has a 29392 bp sequence. The new gene can be used to cc produce a gene knockout mouse, useful as a disease model of human cc Sequence 29392 Bp; 8318 A; 6747 C; 6514 G; 7813 T;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 15
V15422
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                                                                                                                                                                                                                                                                    Query Match 2.6%; Score 42; DB 1; Length 29392; Best Local Similarity 48.7%; Pred. No. 0.28; Matches 114; Conservative 0; Mismatches 120; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match 2.7%; Score 43; DB 1; Length 2487; Best Local Similarity 56.8%; Pred. No. 0.057; Matches 79; Conservative 0; Mismatches 60; Indels
1386 gaagaaatggatgttttggatggacttaaaatggaagcaactgaggtagaaaaa 1439
                                                                                       1326 titgaaggttitaaagagctccaacgagatgaagagaacttcttaagagagctgagcaaa 1385
                                                                                                                                                        1266 gagatagaagaagaagtagagaggtgaggataaagaagtcaccttattcagtaaactg 1325
                                                                                                                                                                                                                     Mouse poly Ig receptor protein gene.
Mouse; poly Ig receptor protein; pIgR protein; pIg; deficiency;
knockout mouse; disease model; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 V15422 standard; DNA; 29392 BP. V15422;
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                                                                               GenCore version 4.5
Copyright (c) 1993 - 1998 Compugen Ltd.
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58:	7	56:	55:	54:
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

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ALIGNMENTS

ACCESSION NID VERSION	RESULT 1 AI483033 LOCUS DEFINITION
CLEB8K10, AI483033 g4386957 AI483033.	AI483033 EST242356
CLEB8K10, mRNA sequence. AI483033 94386957 AI483033.1 GI:4386957	584 bp tomato shoot,
·	mRNA Cornell
	EST Lycopersicon
	AI483033 584 bp mRNA EST 12-APR-1999 EST242356 tomato shoot, Cornell Lycopersicon esculentum cDNA clone
	clone

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TGGTCTTGAAGAAATGGGGCCAATTGGCCAAAACAGCAATTGTAACTATATTTTTGT 472
                     t99tft9g9agaaatg9g9ccaaft1gccaaaacagcaattgtagctatattcattttgt 420
                                                                       TTAACCAGAATGTACCTAAGGGAAATACAATATGGAAATTTCCAGAAGATGTAGCTTTGA
                                                                                                 GTTCCAGAAGACAGATACCTACATACTTGCAGAAATCTTCTAGAATATGTTGTGGTTTGG 292
                                                                                                                                                                                                                                                     9ttccagcagacggatacctagatactttcgaaaaatctccctagaatatgctgtggtttgg 240
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           464;
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Clemson, Hall, Clemson, SC
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On Jun 5, 1998 this sequence version replaced gi:3189131.
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Ronning,C.M., Craven,M.B., Fujii,C.Y., Bowman,C.L., Nierman,W.,
Fraser,C.M., Venter,J.C., Martin,G.B., Giovannoni,J.J. and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; euphyllophytes; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Asteridae; euasterids I; Solanales; Solanaceae; Solanum;
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1 (bases 1 to 584)
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864 656 4293
1: dfrisch@CLEMSON.EDU.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /note="Vector: pBK_CMV; Site_1: EcoR1; Site_2: Xho1; CLEB - Tomato Shoot Meristem EST Library. Oligo-dT primed cDNA library made from tomato vegetative shoots including meristems and small expanding leaves."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              David Frisch
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /tissue_type="shoot meristem"
/dev_stage="8 week old plants"
/lab_host="XLOLR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /organism="Lycopersicon/cultivar="TA496"
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                                                                         412
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486 aggftagagcttycgaagtgcatttcgaaccctgcatgtgcagctaatgttgcctgtctc 545

14 AGGATAGAACTCGCAAAGTGCATTGCCAACCCTGCCTGTGCAGCCAATGTCGCGTGCCTT 73

Matches

Conservative

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Genes galore: a summary of methods for accessing results from large-scale partial sequencing of anonymous Arabidopsis cDNA c plant Physiol. 106, 1241-1255 (1994)

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Email: 22313tcn@ibm.cl.msu.edu
Seq primer: T7 dye primer.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Lansing, Mi
Tel: 517-353-0854
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Michigan State University
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Contact: Thomas Newman
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               On May 8, 1995 this sequence version
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Newman, T., deBruijn, F.J., Green, P., K
McIntosh, L., Ohlrogge, J., Raikhel, N.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Arabidopsis thaliana
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  Similarity
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MSU-DOE Plant Research Laboratory
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                                                                                                                        108
                                                                                                      /note="Vector: lambda Zip-Lox; Site_1: Sal; Site_2: Not; Lambda PRL2 is a cDNA library derived from equal quantities of 4 pools of mRNA. The mRNA sources were 1) 7 day germinated etiolated seedlings; 2) tissue culture grown roots; 3) staged plants half with 24 hour light cycle, half on 16 hr light, 8 hour dark rosettes; 4) same plants as 3 but aerial tissue (stems, flowers and siliques. The vector is BRL's lambda Zip-Lox. The cDNA inserts were directionally cloned with Sal-Not arms using oligo dT primed cDNA. "

108 a 97 c 102 g 114 t 17 others
                                                                                                                                                                                                                                                                                                                                                                                                         /strain="var columbia'
/db_xref="taxon:3702"
/clone="207C23T7"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /crganism="Arabidopsis thaliana"
                                                                                                                                                                                                                                                                                                                                                                                        /clone_lib="Lambda-PRL2"
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12.6%;
76.3%;
Score 201; DB 24;
Pred. No. 2.5e-39;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Green, P., Keegstra, K., Kende, H., Raikhel, N., Somerville, S., Thoma
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               replaced
                    Length 438;
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TITLE
                                                         Query Match
Best Local Similarity
Matches 247; Conserv
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AACAATAATACCGGAGCTGGAAAGAGCTGCAAAGAGCGTAGGTCGGGACTTCTCGACGTT 541
                          aagcattataccggagttgcaaaccgcagctcaaaaagttgggcgtgatttcaacacatt 1165
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Zea mays
                                                                                                                                                                                                                                                                                                                                                                                                         Department of Biological Sciences
Stanford University
855 California Ave, Palo Alto, CA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Unpublished (1999)
On May 18, 1998 this sequence version
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605018D09.x1 605 - Endosperm
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euphyllophytes; Spermatophyta; Magnoliophyta; Liliopsida; Poales;
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                                                           Conservative
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                                                                                                                                                                                                                                                                                                                                               walbot@stanford.edu
605018 row: D colu
                                                                                                                                                 Ø
                                                                                                                                                                          /note="Organ: Kernel; Vector: pAD-GAL4-2'; Site_1:
Site_2: XhoI; Kernel endosperm cDNA library from S
                                                                                                                                                                                                          /tissue_type="pericarp, embryo, and endosperm"
/dev_stage="10 days post-pollination"
/lab_host="DH5(alpha)"
                                                                                                                                                                                                                                          /db_xref="taxon:4577"
/clone_lib="605 - Endosperm cDNA library from Schmidt lab"
                                                                                                                                                                                                                                                                                   /organism="Zea mays"
/cultivar="Ohio43"
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                                                                        Score 172; DB 50; Pred. No. 3.3e-32;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TCAGCTCAACATSGAAGCGACTGAAGTTGAGCAAGTCTTCAGCCGTGCACTACCGTTGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Morio,T., Urushihara,H., Saito,T., Ugawa,Y., Mizuno,H., Yoshida,M., Yoshino,R., Mitra,B.N., Pi,M., Sato,T., Takemoto,K., Yasukawa,H., Williams,J., Maeda,M., Takeuchi,I., Ochiai,H. and Tanaka,Y.
The Dictyostelium developmental cDNA project: generation and analysis of expressed sequence tags from the first-finger stage of
                                                                                                                                                                                                                                                                      Email: d402hu@sakura.cc.tsukuba.ac.jp
PROJECT ~ 'Dictyostelium discoideum cDNA
                                                                                                                                                                                                                                                                                                            University of Tsukuba
3-3-10 Ten-nodai, Tsukuba, Ibaraki 305, Japan
                                                                                                                                                                                                                                                                                                                                                                                                                                                               DNA Res. 5 (6), 335-340 (1998) 99156227
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Dictyostelium discoideum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AU034306 527 bp mRNA EST 28 AU034306 Dictyostelium discoideum SL (H.Urushihara) discoideum cDNA clone SLC554, mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                       On Jan 14, 1998 this sequence version replaced
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             development
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                                                                                                                                                                                                                                                                                                                                                                    Institute of Biological Sciences
                                                                                                                                                                                                                                                                                                                                                                                            Contact: Hideko Urushihara
                                                                                                                                                                                                                                                     POLYA-NC
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                        267
    /strain="AX4"
/db_xref="taxon:44689"
/map="8p21.3-p2"
/clone="SLC554"
/clone_lib="pictyostelium discoideum SL
/dev_stage="slug"
a 67 c 92 g 100 t 1 other
                                                                                                                                                                                                                             Location/Qualifiers
                                                                                                                                                                             /organism="Dictyostelium
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                     1 others
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                                                              (H.Urushihara)"
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95;

Conservative

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Similarity

2.8%;

Score 45.2; Pred. No. 0. Mismatches

DB 43;).35; 83;

Length 527; Indels

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Bonaldo, M.F., Lenno
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        UI-R-BT0-po-b-01-0-UI.s1 UI-R-BT0 Rattus norvegicus cDNA clone UI-R-BT0-po-b-01-0-UI 3', mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Seq primer: M13 Forward
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Genetics (www.resgen.com)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Email: msoares@blue.weeg.uiowa.edu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Tel: 319 335 8250 Fax: 319 335 9565
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     451 Eckstein Medical Research Building Iowa City,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           University of Iowa
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     97044477
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Rattus norvegicus
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                 18
/lab_host="DHIOB (Life Technologies)"
/note="Vector: p773D-Pac (Pharmacia) with a modified
/note="Vector: p773D-Pac (Pharmacia)"
/note="Vector: p773D-Pac (Pharmacia)"
/note="Vector: p773D-Pac (Pharmacia)"
/note="Vector: p773D-Pac (Pharmacia)"
/note="Vector: p173D-Pac (Pharmacia)"
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/normalized libraries of a mixture of individually tagged
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/thalamus, mid-brain, medulla, corpus striatum, cerebral
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/db_xref="taxon:10116"
/clone="UI-R-BTO-po-b-01-0-UI"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /dev_stage="adult"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /clone_lib="UI-R-BTO"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /organism="Rattus norvegicus"
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1213 ggttggagaagaagtggaagaaggagaaaggacgatcataaaagaagttgaggagatag 1272
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Email: Robert_Strausberg@nih.gov
CDNA Library Preparation: David B. Krizman, Ph.D.
cDNA Library Arrayed by: I.M.A.G.E. Consortium, LLNL
DNA Sequencing by: Washington University Genome Sequencing Center
Clone distribution: NCI-CGAP clone distribution information can be
found through the I.M.A.G.E. Consortium/LLNL at:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AI345703 221 bp mRNA EST 08-APR-1999 tb84b07.xl NCI_CGAP_Lu26 Homo sapiens cDNA clone IMAGE:2061013 3's similar to contains element TAR1 repetitive element;, mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Seq primer: -40UP from Gibco
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NCI-CGAP http://www.ncbi.nlm.nih.gov/ncicgap
National Cancer Institute, Cancer Genome Ana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      www-bio.linl.gov/bbrp/image/image.html
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Contact: Robert Strausberg, Ph.D
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                                  Directionally cloned. Size-average insert size 500 bp. non-amplified. " 10 t
                                                                                                                                                                                                                                                    /clone="IMAGE:2061013"
/clone_lib="NCI_CGAP_Lu26"
                                                                                                                                                                                             /tissue_type="invasive adenocarcinoma"
/dev_stage="adult"
                                                                                                                                                                                                                                                                                                                                  /organism="Homo sapiens"
/db_xref="taxon:9606"
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95; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                 Email: Robert_Strausberg@nih.gov
This clone is available royalty-free through LLNL
IMAGE Consortium (info@image.llnl.gov) for further
Seq_primer: -41ml3 fwd. ET from Amersham
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AA465230 371 bp n
aa24g03.s1 NCI_CGAP_GCB1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Unpublished (1997)
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National Cancer Institute, Cancer Genome Anatomy Project (CGAP),
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Eutheria; Primates; Catarrhini; Hominidae; Homo.
1 (bases 1 to 371)
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                                                                                                                                                                                                                                                                                                                                                                                                                                  High quality sequence stop: 346.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Contact: Robert Strausberg, Ph.D.
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                  97
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gene Index
                                                             /note-"Vector: pT7T3D-Pac (Pharmacia) with a modified polylinker; Site_1: Not I; Site_2: ECO RI; 1st strand cDNA was prepared from human tonsillar cells enriched for germinal center B cells by flow sorting (CD20+, IgD-), provided by Dr. Louis M. Staudt (NCI), Dr. David Allman provided by Dr. Louis M. Staudt (NCI), Dr. David Allman
             constructed by Bento Soares and M. Fatima Bonaldo." 42\ c \ 77\ g \ 155\ t
                                                    went through one round of normalization, and was
                                                                                                                                                                                                                                                                     /tissue_type="germinal center B cell"
/lab_host="DH10B"
                                                                                                                                                                                                                                                                                                       /clone="IMAGE:814228"
/clone_lib="NCI_CGAP_(
                                                                                                                                                                                                                                                                                                                                        /db_xref="GDB:6032240"
/db_xref="taxon:9606"
                                                                                                                                                                                                                                                                                                                                                                              /organism="Homo sapiens"
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Pred. No. 0.58;
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l Homo sapiens cDNA clone
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IMAGE:814228 3',
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Query Match

2.7%;

Score 43.6;

DB 34;

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1 (bases 1 to 302)

Marra, M. Fillier, L., Allen, M., Bowles, M., Dietrich, N., Dubuque, T., Geisel, S. Kucaba, T., Lacy, M., Le, M., Martin, J., Morris, M., Schellenberg, K., Steptoe, M., Tan, F., Underwood, K., Moore, B., Theising, B., Wylie, T., Lennon, G., Soares, B., Wilson, R. and Waterston, R.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        vl5le08.rl Stratagene mouse ski
IMAGE:975782 5', mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                           Seq prime: -28m13 rev1 ET from
High quality sequence stop: 268.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                            Fax: 514 200 2007
Email: mouseesfewatson.wustl.edu
This clone is available royalty-free through LLNL; contact the
This clone is available royalty-free through LLNL; contact the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Unpublished (1996)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mus musculus
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Tel: 314 286 1800
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WashU-HHMI Mouse EST Project
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Contact: Marra M/Mouse EST Project
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     4444 Forest Park Parkway, Box 8501,
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                       170
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                     Q
           /organism="Mus musculus"
/strain="C57BL/6"
                                                                                                                                                                     /tissue_type="whole skin"
/dev_stage="11 weeks old"
                                                                                                                                                                                                           /:lone_lib="Stratagene mouse skin (#937313)"
/sex="females"
                                                                                                                                                                                                                                              /clone="IMAGE:975782"
                                                                                                                                                                                                                                                                  /map="X"
                                                                                                                                                                                                                                                                                      /db_xref="taxon:10090"
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                                                                                                                                                                                                                                                                                                                                                                                         R. Emmert-Buck, M.D., Ph.D. David B. Krizman, Ph.D. cDNA Library Preparation: David B. Krizman, Ph.D. cDNA Library Arrayed by: Greg Lennon, Ph.D. DNA Sequencing by: Washington University Genome S. Clone distribution: NCI-CGAP clone distribution i found through the I.M.A.G.E. Consortium/LLNL at:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Tumor Gene Index
Unpublished (1997)
On Jan 19, 1998 this sequence version replaced
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similar to contains element TAR1 repetitive element ;, mRNA
                                                                                                                                                                                                                                                                                                                                      Seq primer: -40ml3 fwd. ET from Amersham
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Email:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Contact: Robert Strausberg, Ph.D.
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                                                                                                                                                                                                                                                                                                                                                                         www-bio.llnl.gov/bbrp/image/image.html
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Tissue Procurement: Monica Brown, M.D., Elise Kohn, M.D., Michael
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           National Cancer Institute, Cancer Genome Anatomy Project (CGAP),
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NCI-CGAP http://www.ncbi.nlm.nih.gov/ncicgap
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Robert_Strausberg@nih.gov
                                                     priming.
gel, aver
               non-amplified.
                                                                                      papillary
                                     /note="Organ: ovary; Vector: pAMP1; mRNA made from papillary serous ovarian carcinoma, cDNA made by oligo-dT priming. Directionally cloned. Size-selected on agarose gel, average insert size 500 bp. Primary library, non-amplified. "
                                                                                                                                           /tissue_type="papillary serous carcinoma"
/dev_stage="adult"
                                                                                                                                                                                                                        /map="839C02; 821G11; 4; 4p15.33-4p16.1; 4p15.33-4p16.1"
/clone="IMAGE:1861372"
                                                                                                                                                                                                                                                             /organism="Homo sapiens"
/db_xref="taxon:9606"
                                                                                                                             /lab_host="DH10B"
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AI344147.1
                                                                                                                                                                                                                                                                                                                                                                                     Email: Robert_Strausberg@nih.gov
cDNA Library Preparation: David B. Krizman, Ph.D.
cDNA Library Arrayed by: I.M.A.G.E. Consortium, LLNL
DNA Sequencing by: Washington University Genome Sequencing Center
Clone distribution: NCI-CGAP clone distribution information can be
found through the I.M.A.G.E. Consortium/LLNL at:
www-bio.llnl.gov/bbrp/image/image.html
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Contact: Robert Strausberg, Ph.D. Tel: (301) 496-1550
Email: Robert_Strausberg@nih.gov
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Unpublished (1997)
On Oct 20, 1997 this sequence version replaced gi:2519916.
                                                                                                                                                                                                                                                                                                                            Seq primer
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National Cancer Institute, Cancer Genome Anatomy Project (CGAP),
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Directionally cloned. Size-
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                                                              carcinoma tissue, cDNA made by oligo-dT priming Directionally cloned. Size-selected on agarose
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                                                                                                                                            /clone_lib="NCI_CGAP_Lu25"
/tissue_type="bronchioalveolar carcinoma'
/dev_stage="adult"
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                                                                                                  /note="Organ: lung; Vector: pAMP1; mRNA made from lung
                                                                                                                                                                                                         /clone="IMAGE: 2061390"
                                                                                                                                                                                                                              /map="17"
                                                                                                                                                                                                                                                 /organism="Homo sapiens"
/db_xref="taxon:9606"
                                                                                                                                                                                                                                                                                                     r: -40UP from Gibco.
Location/Qualifiers
                                                                                                                             /lab_host="DH10B"
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                                            Primary library,
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Query Match Best Local Similarity

2.7%;

Score 43; Pred. No.

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              gagaaaggacgatcataaaagaagttgaggagatagaagaagaagtagagaaggtgagag 1296
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   IMAGE Consortium (info@image.lln1.gov) for further information. Possible reversed clone: polyT not found Seq primer: -40ml3 fwd. ET from Amersham High quality sequence stop: 430.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Unpublished (1997)
On Jan 17, 1998 this sequence version replaced
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1 (bases 1 to 435)
Hiller,L., Allen,M., Bowles,L., Dubuque,T., Geisel,G., Jos.
Krizman,D., Kucaba,T., Lacy,M., Le,N., Lennon,G., Marra,M.,
Martin,J., Moore,B., Schellenberg,K., Steptoe,M., Tan,F.,
Theising,B., White,Y., Wylie,T., Waterston,R. and Wilson,R.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ae80e09.s1 Stratagene schizo brain S11 Homo sapiens cDNA clone IMAGE:970504 3' similar to contains Alu repetitive element;, mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          This clone is available royalty-free through LLNL; contact the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              4444 Forest Park Parkway, Box 8501, St. Louis, MO 63108
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Washington University School of Medicine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Contact: Wilson RK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                WashU-NCI human EST Project
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                       /tissue_type="schizophrenic brain S-11 frontal lobe"
/dev_stage="34 years old"
/dev_stage="34 years old"
/lab_host="SQRR (kanamyvin resistant)"
/lab_host="SQRR (kanamyvin resistant)"
/note="vector: Bluescript SK: Site_1: EcoRI; Library
/note="vector: Mass
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Diseases (Unpublished) Stanley Neurovirology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ;; Metazoa; Chordata; Craniata; Vertebrata; Mammalia;
Primates; Catarrhini; Hominidae; Homo.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /db_xref="taxon:9606"
/map="11; 737E12; 16"
/clone="IMAGE:970504"
                                                                                                                                                                                                                                                                                                                                                                                                                                                             /sex="male"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /clone_lib="Stratagene schizo brain S11"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /organism="Homo sapiens'
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                                                                                                                                                                                                                                                             source
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EST submitted by Molecular Parasitology Group, New England Biolabs, Inc., 32 Tozer Road, Beverly, MA. 01915, USA. Email: dnaseq@nsb.com. SZ in the clone designation, refers to 'Subtracted Method £'. The numerical designation after the SZ refers to the microtiter tray number (01 - 48) followed by the letter and number of the microtiter tray position. Method 'Z' refers to sequenced clones which have been selected after hybridization subtraction using highly redundant clones present in the gridded library (18,000 mass-excised colonies gridded as a high density array on nylon filters). Colonies not represented in the probe sets were
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Unpublished (1995)
On Dec 20, 1995 this sequence version replaced gi:1133752
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AI723679 610 bp mRNA EST 11-JUN-1999
BSBmL3SZ45B6SK Brugia malayi infective larva cDNA (SAW94WL-BmL3)
Brugia malayi cDNA clone BSBmL3SZ45B6SK 5', mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Smith College Department of Biological Sciences
Department of Biological Sciences, Clark Science Center, Smith
College, Northampton, MA, 01063, USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Brugia malayi.
Brugia malayi
                                                                                                                                                                                                                                                                               Seq primer: pBluescript SK.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Fax: 4135553786
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Williams, S.A.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Contact: Steven A. Williams
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Genes expressed in infective third stage larvae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Filarioidea; Onchocercidae; Brugia.
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1 79 c 92 g 111 t
       mRNA was
                                                                              /lab_host="XL1-Blue MRF'"
                                                                                                        /clone_lib="Brugia malayi infective larva cDNA (SAW94WL-BmL3)"
/note="Vector: lambda UniZap XR; Site_1: EcoR I; Site_2: Xho I; Lymphatic filarial nematode parasite of humans. mRNA was prepared from third stage infective larvae of
                                                                                                                                                                               /db_xref="taxon:6279"
                                                                                                                                                       'clone="BSBmL3SZ45B6SK"
                                                                                                                                                                                                         /strain="TRS Labs"
                                                                                                                                                                                                                                ′organism="Brugia malayi"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 to 610)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GAGAAAGAGGATGAAGATGATTATTATCAAGATGATAGTGATGAGAAAGAGGAGGAG 217
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 gaagtagagaaggtgagagataaagaagtcaccttattcagtaaactgtttgaaggtttt 1337
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 128;
                                                                                                                                                                                                                                                                                    Email: Robert_Strausberg@nih.gov
cDNA Library Preparation: David B. Krizman, Ph.D.
cDNA Library Arrayed by: I.M.A.G.E. Consortium, LLNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AI335076 214 bp mRNA EST: 16-FEB-1999 ta44d06.x2 NCI_CGAP_Lu25 Homo sapiens cDNA clone IMAGE:2046923 3's similar to contains element TAR1 repetitive element;, mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                              Unpublished (1997)
On Jan 17, 1998 th
                                                                                                                                                                                                        DNA Sequencing by: Washington University Genome Sequencing Center Clone distribution: NCI-CGAP clone distribution information can be found through the I.M.A.G.E. Consortium/LLNL at:
                                                                                                                                                                                                                                                                                                                                                                  Contact: Robert Strausberg, Ph.D. Tel: (301) 496-1550
                                                                                                    Seq primer:
                                                                                                                                                                                  www-bio.llnl.gov/bbrp/image/image.html
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NCI-CGAP http://www.ncbi.nlm.nih.gov/ncicgap.
National Cancer Institute, Cancer Genome Anatomy Project (CGAP),
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1 (bases 1 to 214)
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                                                                                                                               Insert Length: 690
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/organism="Homo sapiens"
/db_xref="taxon:9606"
                                                                           Location/Qualifiers
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47.4%;
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Pred. No. 1
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FEATURES

Location/Qualifiers

source

/organism="Homo sapiens" /db_xref="taxon:9606" /clone="IMAGE:1862617" /clone_11b="NCI_CGAP_Ov26"

/tissue_type="papillary serous carcinoma"

/sex="female"

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AI053452 156 bp mRNA EST 15-JUL-1998 qi78f01.xl NCI_CGAP_Ov26 Homo sapiens cDNA clone IMAGE:1862617 3's similar to contains element THR Ll repetitive element;, mRNA
                                                               R. Emmert-Buck, M.D., Ph.D.

CDNA Library Preparation: David B. Krizman, Ph.D.

CDNA Library Arrayed by: Greg Lennon, Ph.D.

CDNA Sequencing by: Washington University Genome Sequencing Center

Clone distribution: NCI-GGAP clone distribution information can be

found through the I.M.A.G.E. Consortium/LLNL at:
                                                                                                                                                                                                                                                                                                          Unpublished (1997) On Jan 19.71998 this sequence version replaced gi:2285388
Seq primer: -40ml3 fwd. ET from Amersham.
                                                                                                                                                                                                                                                    Contact: Robert Strausberg, Ph.D. Tel: (301) 496-1550
                                                                                                                                                                                                                                                                                                                                                                                    NCI-CGAP http://www.ncbi.nlm.nih.gov/ncicgap.
National Cancer Institute, Cancer Genome Anatomy Project (CGAP),
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Mammalia;
Eutheria; Frimates; Catarrhini; Hominidae; Homo.
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                                                                                                                                                                                                       Tissue Procurement: Monica Brown, M.D., Elise Kohn,
                                                                                                                                                                                                                                   Email:
                                                                                                                                                                                                                                                                                                                                                                   Tumor Gene Index
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                                               www-bio.linl.gov/bbrp/image/image.html
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                                                                                                                                                                                                                            Robert_Strausberg@nih.gov
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /note="Organ: lung; Vector: pAMP1; mRNA made from lung
carcinoma tissue, cDNA made by Oligo-dT priming.
Directionally cloned. Size-selected on agarose gel,
average insert size 500 bp. Primary library,
non-amplified. "
a 9 c 76 g 8 t
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/dev_stage="adult"
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Pred. No. 2.5;
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/dev_stage="adult" /lab_host="DH10B"

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SOURCE
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TITLE
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Best Local Similarity
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                                                                                                                                                                                                                                                                                                                                                                                               Email: Robert_Strausberg@nih.gov
Tissue Procurement: W. Marston Linehan, M.D., Rodrigo F. Chuaqui,
M.D., Michael R. Emmert-Buck, M.D., Ph.D.
cDNA Library Preparation: David B. Krizman, Ph.D.
cDNA Library Arrayed by: Greg Lennon, Ph.D.
DNA Sequencing by: Washington University Genome Sequencing Center
Clone distribution: NCI-CGAP clone distribution information can be
found through the I.M.A.G.E. Consortium/LLNL at:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AA804825 387 bp mRNA EST 18-FEB-1998 nv98a08.sl NCI_CGAP_pr16 Homo sapiens cDNA clone IMAGE:1237814 similar to contains Alu repetitive element;contains element TAR1
                                                                                                                                                                                                                                                                                         Seq F
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Tumor Gene Index
Unpublished (1997)
On Jan 14, 1998 this sequence version replaced gi:1796874.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               repetitive element ;, mRNA sequence. AA804825 g2873801
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Contact: Robert Strausberg, Ph.D. Tel: (301) 496-1550
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NCI-CGAP http://www.ncbi.nlm.nih.gov/ncicgap.
National Cancer Institute, Cancer Genome Anatomy Project (CGAP),
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Homo sapiens
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Seq primer: -40ml3 fwd. ET from Amersham
High quality sequence stop: 352.
                                                                                                                                                                                                                                                                                                                                                                               www-bio.llnl.gov/bbrp/image/image.html
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/note="Organ: prostate; Vector: pAMP10; mRNA made from invasive prostate tumor cells, cDNA made by oligo-dT priming. Non-directionally cloned. Size-selected on
                                                                                                                                                                               /organism="Homo sapiens"
/db_xref="taxon:9606"
/map="17"
                                                                    /tissue_type="tumor"
/lab_host="DH10B"
                                                                                                               /sex="male"
                                                                                                                                    /clone_lib="NCI_CGAP_Pr16"
                                                                                                                                                             /clone="IMAGE:1237814"
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ORIGIN BASE COUNT 17 ayarose gel, avera D. Krizman, NIH." a 134 c 29 g average insert size 600 bp. 207 t Library made Ьy

Matches Query Match Best Local Similarity Conservative 2.6%; 63.9%; 0,; Score 41; Pred. No. Mismatches DB 38; 3.5; 35; Length 387; Indels 0 Gaps 0

- Ş 1209 gagaggttggagaagaagtggaagaaggaggagaaggacgatcataaaagaagttgaggag 1268
- В
- QΥ 1269 atagaagaagragtagagagtgagagataaagaag 1305
- 밁 40 AAGGAAGAAGAAGTAACTAAGGAGGAAGGAAGGAG 4

Search completed: October 13, 1999, 18:23:36 Job time: 2504 sec

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GenCore version 4.5 Copyright (c) 1993 - 1998 Compugen Ltd.

OM protein - protein search, using sw model

Run on: October 14, 1999, 03:56:10 ; Search time 34.13 Seconds (without alignments) 979.923 Million cell updates/sec

Title: Perfect score: Sequence: US-09-075-375-4
7495
1 MALSLHTVFLCKEEALNLYA.....MEASEVEKLFGKALPIRKVR 1412

Scoring table: BLOSUM62

Searched:

188963 seqs, 23686106 residues

Database : A_Geneseq_36:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

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                                                                                                                                                                                                                                      productive and/or more resistant to disease. Underexpression of VDE increases photosynthetic efficiency under low light. The photosensitivity of a range of crops, trees and ornamentals can increase.
                                                                                                                                                                                                                                                                                                                                                                                                            DNA encoding plant violaxanthin de-epoxidase - used to sensitivity of a plant to light Example 1; Fig 1; 41pp; English.
The 55 kDa violaxanthin de-epoxidase (VDE) (W09874) of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            06-AUG-1996; US-023502.
(CALJ ) CALGENE INC.
Bugos RC, Rockholm DC,
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07-NOV-1996; U18291
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misc_difference 190
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misc_difference 171
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                                                                                                                   1 MALSLHTVFLCKEEALNLYARSPCNERFHRSGQPPTNIIMMKIRSNNGYFNSFRLFTSYK 60
               PRVDAVDALKTCACLLKECRIELAKCIANPSCAANVACLQTCNNRPDETECQIKCGDLFE
                                                                                          MALSIHTVFLCKEEALNIYARSPCNERFHRSGQPPTNIIMMKIRSNNGYFNSFRLFTSYK 60
                                         TSSFSDSSHCKDKSQICSIDTSFEEIQRFDLKRGMTLILEKQWRQFIQLAIVLVCTFVIV
                                                                  TSSFSDSSHCKDKSQICSIDTSFEEIQRFDLKRGMTLILEKQWRQFIQLAIVLVCTFVIV 120
Similarity
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Pred. No. 4.1e-189;
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misc_difference 127
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misc_difference 146
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misc_difference 140
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                                                                                                                                                                                                                                                                                                                                                                                                                Arabidopsis violaxanthin de-epoxidase. Violaxanthin de-epoxidase; VDE; light; photosensitivity;
                                                                                                                                                                                                                                                                                                                                                                                                                                             W09876;
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W09717447-A2.
15-MAY-1997.
07-NOV-1996; U18291
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misc_difference 150
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178
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122
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32 The violaxanthin de-epoxidase (VDE) (W09876) of Arabidopsis catalyses the de-epoxidation of violaxanthin to zeaxanthin and antheraxanthin. This system, termed energy dependent non-radiative antheraxanthin. This system, termed energy dependent non-radiative cenergy dissipation or non-photochemical fluorescence quenching, centreduction and photoinhibitory damage. The amino centre production of the vDE was deduced from an isolated cDNA clone (T66243). VDE nucleic acids (see also T66241-42), in sense or antisense orientation, can be used in genetic constructs to modify the levels in plants. Increased levels result in the plant being tolerant of increased light and therefore more productive and/or more resistant to disease. Underexpression of VDE increases continued to the photosensitivity of a range of crops. trees and ornamentals can be modified.
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Bugos RC, Rock!
WPI; 97-281036/1
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06-AUG-1996;
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                                                                                                                                                                                                                                                                                                                  TCGPEPALVERTEKTVEEGERIIVKEVEEIEEEVEKEVEKVGRTEMTLFQRLAEGFNELK
                                                                                                                                    standard; Protein; 1786
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US-023502.
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P. falciparum liver stage antigen-3.
Plasmodium falciparum; pre-erythrocyte; liver stage antigen; prophylaxis; Thai strain; gene organisation; exon; intron; hy glycosyl-phosphatidylinositol membrane anchoring sequence; ar vaccine; immunotherapy; malaria.

n; intron; hydrophobic; sequence; antibody;

serum

W24790; 08-OCT-1997 (first entry)

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Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 screen a library generated from Thai strain KI. One clone contained a 6.85 kb insert including the genomic sequence T78867. The gene comprises a 1.8 kb region encoding 3 major blocks of tetrapeptide repeats (especially the amino acid sequence VEES, VEEN, VEEI, VAPS, VAPT, etc) and a 3 hydrophobic region corresponding to a glycosyl-phosphatidyl-inositol membrane anchoring sequence. The invention relates to new polypeptides of at least 10 amino acids derived from the LSA-3 protein with the exception of the peptides W24791-4. The LSA-3 peptides can be used to raise antibodies and as vaccines for immunotherapy of malaria. Sequence 1786 AA;
1194 KDKEKDVSLVVEEVQDND----MDESVEKVLE----
                                                                                                                                                           1110 -LKEMFFNLEDVFKS---ESDVITVEEIKDEPVQKEVEKETVSIIEEMEENIVDVLEE--
                                                                                                                                                                                                                                          1073 EGVQETVTEHVEQNVYVDVDVPAMK----DQF-----LGILNEAGG-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 This sequence corresponds to a Plasmodium falciparum strain Kl pre-erythrocytic liver stage antigen-3 (LSA-3) protein. The encoding gene sequence was isolated by screening a P. falciparum strain T9/96 library with serum from a missionary treated by prophylaxis (for strain T6/96 see FR9101286). Of 20 clones isolated, clone 7295 was used to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             prodn. and diagnosis
Claim 1; Fig 2A-I; 69pp; French
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                                    732 TEENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLYQDDWYILSSK 791
                                                                                                                674 VSRKKCVPRKSDVGD--FPVPDPSVLVQKFDMKDFSGKWFITRGLNPTFDAFDCQLHEFH
                                                                                                                                                                                                   617 LLKECRLELAKCISNPACAANVACLQTCNNRPDETECQ---IKCGDLFENSVVDRFNECA 673
                                                                                                                                                                                                                                                                                558 HSINQNYPKG-NSGCKFPKDVALMYWEKWGQFAKTAIVAIFILSVASKADAVDALKTCTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 858 TILENVEETTAESVTTFSNILEEIQENTITNDTI---EEKLEELHENVLSAALENTQSEE 914
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Plasmodium falciparum poly:peptide(s) and related nucleic acids
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12-JUN-1996;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EKLLIKEAVEIEEEVEKEV-----EKVRDTEMTLFQRLLEGFKELQQD-----EENFVREL 441
                                                                                ----EKEDLTDKMIDAVEESIEISS-DSKEET
                                                                                                                                                                                                                                                                                                                                                                                                     EKLNETVFNTVLDKVEETVEISGESLENNEMDKAF----FSEIFDNVKGIQENLLTG-- 1025
                                                                                                                                                                                                                                                                                                                                                             RFSWGWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLFSHG----KHNLSPA 557
                                                                                                                                                                                                                                                                                                                                                                                                                                              SKEEKEILNELOMEATEVEKLEGRALPIRKLRMALAPHSNFLANHETIKYYVGSKLPGHK 501
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18.1%;
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N-PSDB; Q86851.
Purified mammalian protein mitosin and agents that bind it and inhibit its action - used to promote cell growth or to inhibit cell
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                                                            WPI; 95-170229/22.
                                                                            (TEXA) UNIV TEXAS SYSTEM Lee W, Zhu X;
                                                                                                              27-APR-1995.
24-OCT-1994; U12162.
22-OCT-1993; US-141239
                                                                                                                                                                                                                                                                                                                    Human mitosin
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                                                                                                                                                                                                                                                                                     Cell cycle; M phase; mitosin; retinoblastome; mitosis; cell growth; inhibition.
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1480. .1659
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1660. .1839
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Best Local Similarity
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              R73829 is human mitosin. Mitosin is involved in the regulation of the mammalian mitotic cell cycle. Mitosin as with E2F-1 (see R72824) interacts with the retinoblastoma protein (the retinoblastoma tumour suppressor gene product). Mitosin is first synthesised at the G1/S boundary, it is then phosphorylated from S through M phase, and during mitosis, is closely associated with the centromeres/kinetochores at the mitotic spindle poles. Mitosin is necessary for a eukaryotic cell to enter the M phase of the mitotic cell cycle and its degradation is necessary for a cell to advance on to the next stage. Mitosin is thus useful for controlling cell growth as overexpression of mitosin prevents
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      a cell from exiting the M phase.

An anti-mitosin antibody, antibody fragment or a phosphorylated mitosin mutein (or nucleic acid encoding it) can also be used to inhibit cell division which is particularly useful for the study of the cell cycle. A further use is to control hyperproliferative cells, and so control diseases such as psoriasis and breast cancer. It can also be used to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   division and/or proliferation
Claim 4: Fig 8B; 61pp; English.
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QSL----EKLEEKMESQGIMKNKEIQELEQLLSSERQELDCLRKQYLSENEQWQQKLTSV
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                                                                                  EQTGDMSLLSNLEGAVSANQCSVDEVFCSSLQEENLTRKETPSAPAKGVEELESLCEVYR
                                                                                                                                                                      KAENLVLSTNLRNFQGDLVKEMQLGLEEGLVPSLSSSCVPDSSSLSSLGDSSFY--RALL
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leukaemia; lymphoma;
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Best Local Similarity
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24-OCT-1994; US-328254.
22-OCT-1993; US-141239.
(TEXA) UNIV TEXAS SYSTEM.
Lee W, Zhu X;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   lung cancer and various leukaemias and lymphomas). Reintroduction or supplementation of lost mitosin function by introduction of the protein or nucleic acid encoding the protein into a cell can restore defective chromosome segregation, which is a marker of progressing malignancy. Malignant proliferation of cells can then be halted. The protein can also be used for the detection and diagnosis of hyperproliferative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         This is the amino acid sequence for mitosin, a phosphoprotein necessary for the cell to ente mitosis. The protein's degradation is also necessary for the cell to advance into the next stages of mitosis. The mitosin protein, can be used to control the growth of cells. An anti-mitosin antibody, a mutant or a non-functional analogue of mitosin can inhibit the mitotic cell cycle by preventing the cells from entering the M phase, and over expression of mitosin or its functional equivalent, would inhibit the cycle by preventing cells from leaving the M phase. Antagonists to this protein can be used to control hyperproliferative cells in, (e.g. thyroid hyperplasia, Grave's disease, psoriasis, benign prostatic hypertrophy, Li-Fraumeni syndrome, breast cancer, sarcomas and other neoplasms, bladder cancer, colon cancer,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   such as cancers or psoriasis
Claim 1; Column 40-52; 43pp; English.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 379 LVERLEKTAEEGEKLLIKEAVEIEEEVE-----KEVE-KVRDTEMTLFQRLLEGFKELQQ 432
                                                                                                                                                                LQCSLQTTMNKLNELEKICEILQAEKYE--LVTELND---SRSECITATRKMAEEVGKLL
                                                                                                                                                                                          VAC-LQTCNNRPDETE--CQIKCGDLFENSVVDEFNECAVSRKKCV--PRK--SDVGDF-
                                                                                                                                                                                                                                                                                                                                    ----NSVKERESERNQ-CNFKPQMDLEVKEISLDSYNAQLVQLEAMLRNKELKLQESE
                                       QLHEFHTEENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLYQD--
        QMHFAELQEK-
                                                                                                                               ----PVPDPSVLVQKFDMKDFSGKWFITRGLNP----
                                                                                                                                                                                                                                                     KEKECLQHELQTIRGDLETSNLQDMQSQEISGLKDCEIDAEEKYISGPHELSTSQNDNAH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NRKNELE----QLKEAFAKEHQEFLTKLAFAEERNQNLMLELETVQQALRSEMTDNQNNS
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 188;
--FLSLQSEHKILHDQHCQ--MSSKMSELQTYVDSL
                                                                                                                                                                                                                                                                                             Mismatches
                                                                                   -GEQPNEQHPVSLAPLDESNSYEHLTESDKEV

    useful for, e.g. developing

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                                                                                                                                                                                                                                                                                                                                                                                                                     --EFPAPDPSVLVQNFNISDFNGKWYITSGLNPTFDAFDCQLHEFHTE---
                                          EGFNELKQDEENFVRE-----LSKEEMEFLDEIK-MEASEVEK 1400
                                                                                                                                RTDNTCGPEPALVERIEKTVEEGERIIVKEVEEIEEE----VEKEVEKVGRTEMTLFQRLA
                                                                                                                                                                               QKVIVCLEEELSVVTSERNQL----RGELDTMSKKTTALDQLSEKMKEKTQELESHQSECL
                                                                                                                                                                                                                                P-----EDY:IFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELEKAAKSIGRDFSTFI
                                                                                                                                                                                                                                                                                       DSWKERFLD - - - - - -
                                                                                                                                                                                                                                                                                                                                                                             KLEYFSCDHQELLQRVETSE-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RDRKVESLLNEMKELDSKLHLQEVQLMT--
                                                                                      HCIQVAEAEVKEKTELLQTLSSDVSELLKDKTHLQEKLQSLEKDSQALSLTKCELENQIA 1427
                                                                                                                                                                                                                                                                                                                         ISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLYNHDNEYLH-----YQDDWYILSSKIENK
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QLNKEKELLVKESESLQARLSESDYEKLNVSKALEAALVEK 1468
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ----NELKELTAPLLLKLVGVLACAFLIVPSADAVDALKTCACLLKGCRIELAKC 1084
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                                                                                                                                                                                                                                                                             -VENELSRIRSEKASIEHEALYLEADLEVVQTEKLCLEKDNENK
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Novel human immunomodulatory poly:peptide(s) yeast RAD50 or Drosophila Septin-2 proteins Disclosure; Pages 136-140; 155pp; English.
                                                                            03-SEP-1998.
27-FEB-1997; U03159.
27-FEB-1997; WO-U03159.
(GENE-) GENELABS TECHNOLOGIES
                                                       Dolganov G;
WPI; 98-48]
                                                                                                                                                          Human homologue; yeast RAD50; Drosophila Septin-2; Acyl-CoA synthetase; immunomodulatory activity; identification; activated T-cell.
                                           N-PSDB; V59979
                                                                                                                                    W09838306-A1.
                                                                                                                                                 Homo sapiens
                                                         98-481207/41.
                             have
                            homology to
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Human

W71295; 25-NOV-1998 (first entry) 25-NOV-1998 of yeast RAD50.

W71295 standard; Protein; 1312 AA

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RESULT W2775
ID W1
AC W1
DT 21
DE H1
KW H1
KW H2
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Best Local 9
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        The present sequence represents a human homologue of the yeast S. cerevisiae gene RAD50. The present sequence has 35% overall homology to the yeast RAD50 gene, and is expressed in activated T-cells, testis, foetal liver and heart tissues. The specification also describes sequences encoding human homologues of the yeast RAD50, the Drosophila Septin-2 and Acyl-CoA synthetase. The proteins have immunomodulatory activity. The nucleic acids and proteins can be used to identify activated T-cells in a sample population. They can also be used to isolate and identify sequences
                                     Human; RAD50; DNA repair; tumour suppression; cancer; Septin-2;
central nervous system.
                                                                                                                            W22775 standard; Protein; 1312 AA W22775;
                                                                                Human RAD50
                                                                                                          21-DEC-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         encoding other proteins or other compounds having immunomodulatory
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                                                                                                                                                                                                                                                       LQISTNLQRRQQLEEQTVELSTEVQSLY 902
                                                                                                                                                                                                                                                                                               MDVLDGLKME-----ATEVEKLF 941
                                                                                                                                                                                                                                                                                                                                     KLQGIDLDRTVQQVNQEKQEKQHKLDTVSSKIELNRKLIQDQQEQIQHLKSTTNELKSEK
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DDWYILSSKVENSPEDYIFV--YYKGRNDAWDGYGGSVLYTRSAV-LPESIIPELQTAAQ 839
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FITQL----TDENQSCCPVCQRV-----FQTEAELQEVISD------
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NSVVDEFNECAVSRKKCVPRKSDVGDFPVPDPSVLVQKFDMKDFSGKWFITRGLNPTFDA 722
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     HSKSKEINQTRDRLAKL--NKELASSEQNKNHINNELKRREEQLSSYEDKLFDVCGSQDF 638
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             KTCTCLLKECRLELAKCISNPACAANVACLQTCNNRPDETECQIK------CGDLFE
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                                                                                                                                                                                                                                                                                                                                                                                 -----VEEIEEEVEKVRDKEVTLFSKLFEGFKELQRDEENF-----LRELSKEE
                                                                                                      (first entry)
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19.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ; Score 135.5; DB 1;
; Pred. No. 0.073;
95; Mismatches 218;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ---ADLDRTLRK-----LDQEMEQL-NH--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    --NTCGPEPPLVERLEKKVEEGERTIIKE--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   -----EIEKSSKQRAMLAGATAVYSQ 668
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 1312
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         anaemia with excess blasts. Also disclosed in this invention is Human Septin-2 homologues of which may be used as targets for cancer therapies and central nervous system directed treatment methods, and to measure the proliferative potential of selected cell types.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Claim 5; Page 82-86; 195pp; English.

The human RAD50 (FRAD50) is involved in DNA repair and has tumour suppression activity, can be used to detect predisposition to, decrease the risk of or treat cancers, e.g. acute myeloid leukaemia, myelodysplastic syndrome, therapy related myelodysplastic syndrome, therapy related myelodysplastic syndrome, therapy related acute myeloid leukaemia, refractory anaemia or refractory related myelodysplastic syndrome.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               31-JUL-1997.
24-JAN 1997; U07299.
17-JUL-1996; US-687080.
26-JAN 1996; US-592126.
(GENE-) GENELABS TECHNOLOGIES INC.
Dolganov G;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Human tumour suppressor gene RAD50 - useful to detect predisposition to decrease risk of and treat cancer, also Septin-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             N-PSDB;
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875 LQISTNLQRRQCLEEQTVELSTEVQSLY 902
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nes 124; Consary
                                    MDVLDGLKME-----ATEVEKLF 941
                                                                             KLQGIDLDRTVODVNQEKQEKQHKLDTVSSKIELNRKLIQDQQEQIQHLKSTTNELKSEK
                                                                                                                                                                                                                                         -----LQSKLKLAPDKLKSTESELKKKEKRRDEMLGLVPMRQSIIDLKEKEIPELRNKLQ
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                                                                                                                                                            NVNRDIQR-LKNDIEEQETLLGTIMPEEESAKVCLTDVTIMERFQMELKDVERKIAQQAA
                                                                                                                                                                                                     KVGRDFNTFIKED-----
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            HSKSKEINQTRURLAKL--NKELASSEQNKNHINNELKRKEEQLSSYEDKLFDVCGSQDF
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19.7%;
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Pred. No. 0.073;
Pred. No. 218;
                                                                                                                                                                                                   ---NTCGPEPPLVERLEKKVEEGERTIIKE--
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Matches 180
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07-APR-1998; DK0145.
07-APR-1997; DK-000332.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   protein fusion product. The fusion protein is used in an assay that exemplifies the invention. The specification describes how quantitative information about the influence of a molecule on a cellular response is obtained by recording the variation, caused by the molecule, on mechanically intact living cells, in the spatially distributed light emitted from a luminophore present in the cells. The variation in light emission is processed to provide information that correlates spatial distribution to the degree of the molecule. The method is used to identify agents that (in)directly affect intracellular signalling, especially to screen for potential therapeutic agents or toxins, and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Example 15; Pages 96-98; 326pp; English.
The present sequence represents a human p85alpha-green flourescent protein fusion product. The fusion protein is used in an assay
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Chimeric - Homo sapiens
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Tullin S;
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          1058
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intracellular signalling; chimera.
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                                                                    PRPLPV-APGSSKTEADVEQQALTLPDLAEQFAPPDIAPPLLIKLVEAIEKKGLECSTLY
                                                                                                                                     SRPLSAFRSGFSKGIFDI----VPLPSKNEL---KELTAPLLLKLVGV-----LACAFLI 1057
                                                                                                                                                                                                      LG-FSDGQEARPEEIGWLNGYNEITGERGDFPGTYVEYIGRKKISPP----
                                                                                                                                                                                                                                                                    THCFTSPCHDRIRFFSSDDGIGRLGITRKRINGTFL----LKILPPIQSADLRTTGGRS 1009
                                                                                                                                                                                                                                                                                                                                                                                                      FSKLFEGFKELQRDEENFLRELSKEEMD----VLDGLKMEATEVEKLFGRALPIRKLMAVA 954
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AQXVGRDFNTFIKTDNTCGPEPPLVERLEKKVEEGERTIIKEVEEIEEEEVEKVRDKEVTL 897
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TI-----FFKDDGNYKTRAEV-KFEGDTLVNRIELKGIDFKEDGNILGHKLEYNYNSH 149
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   VPSAD-----AVDALKTCACLLKGCRIE---
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Pred. No. 0.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -EKRDHMVL-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  298;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ---HDFFKSAMPEGYVQER 97
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 968;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels 318;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -LEFVTAAGITL
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                                              reducing their AT content

Example 1; Fig 3c; 48pp; German.

This Sequence represents a modified Plasmodium falciparum gp190/MSP-1

This sequence represents. The gene encoding this protein has been
stabilised by reducing the AT content of the nucleotide sequence. Such a
protein is useful in vaccines against malaria or for producing monoclonal
antibodies (for passive immunisation). The complete gp190 protein can now
be produced outside the parasite and has, at least over extended regions,
the native pattern of folding. Larger amounts of the protein can be
                                                                                                                                                                                                                                                                                             Bujard
WPI; 98
                                                                                                                                                                                                                                                                                                                                                                                                           Synthetic W09814583-A2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1193
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                                                                                                                                                                                                                                  Recombinant production of complete gp190/MSP-1 Plasmodium surface protein - useful in anti-malaria vaccines, also stabilising genes
                                                                                                                                                                                                                                                                                                                                                  02-OCT-1997; E05441.
02-OCT-1996; DE-040817.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  gp190; malaria; MSP-1; merozoite surface protein; stability; vaccine;
monoclonal antibody; passive immunisation; parasite.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1241
                                    produced recombinantly than would be possible using
                                                                                                                                                                                                                                                                         N-PSDB; V21451, V35363.
                                                                                                                                                                                                                                                                                                                                                                                             09-APR-1998.
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Plasmodium falciparum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  W54145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    W54145 standard; Protein; 1639
Sequence
                                                                                                                                                                                                                                                                                                           (BUJA/) BUJARD H.
Bujard H, Pan W, Tolle R;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                23-SEP-1998 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         678
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                KLI-----KIFHRDGKYGFSDPLTFSSVVELINHYRNESLAQYNPKLDVKLLYPVSKYQQ 677
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         KLVGNISWRIKTLDS--GF---FTRSAVQKFVQD-PNQPGVLYNH--DNEYLH----YQD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NNGMNNNMSLQNAEWYWGDISREEVNEKLRDTADGTFLVRDASTKMHGDYTLTLRKGGNN
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                                                                                                                                                                                                                                                                                             98-240088/21
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1639
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                                    the parasites
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Matches Query Match Best Local :

246;

Conservative

207;

Mismatches

Gaps

70;

Similarity

1.8%; 18.0%;

Pred. No. 0 Score 134;

. 14; DB 1; 473;

Length 1639; Indels 444;

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  1107 TECQIKCGDLFENSVVDEFNECAVSRKKCVPRKSDLGEFPAPDPSVLVQNFNISDFNGKW 1166
                                                                                                1049 GVLACAFLIVPSADAVDALKTCACLLKGCR--IELAKCIANPACAANVACLQTCNNRPDE 1106
                                                                                                                                                      1039 K-----EQLESKLNSLNNPKHVLQNESVFFNK-----KKEAE----- 1071
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                559 VVEKEL-----KYYK-------NLISKIENEI---ETLVENIKKDEEQLFEK 595
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                515 VVAKICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGKHNLSPAHSINQNVPKGNSGC--- 572
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      508 NFEKMMGKRYSYKVEKL----THHNTFASYENSKHNL-EKLTKALKY---MEDYSLRNI 558
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   458 EVEKLEGR--ALPIRKLRMALAPHSNFLANHETIKYYVGSKLPGHKRESWGWEDY-FGSI 514
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         460 IKIEKKKI-----ESDKKSYEDRSKSLNDITKEYEKLLNEIYDSKFNNNIDLT 507
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         405 VEKEVEKVRDTEMTLFQRLLEGFKELQQDEENFVRELSKEEKEILNEL-----QMEAT 457
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         404 PNGVTYPLSY-NDINNALNELNSFG---DLINPFDYTKEPSKNIYTDNERKKFINEIKEK 459
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            350 PNLQKAAKSVGRDENNFITTDNSCGPEPPLVERLEKTAEEGEKLLI-----KEAVEIEEE 404
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  347
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  291 QLEEAH----NLISVLEKRIDTLKKNENIKELLDKINEIKNPPPANSGNTPNTLLDKNKK 346
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   244 QLHEFHMENDKLVGNLTWRIKTLDGGFFTRSAVQTF--VQDP-----DLPGALYNHDNE 295
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        249 IENINELIEESKKTIDK-----NKNATKEEEKKKLYQAQYDLS-----IYNK 290
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      184 VDQFNECAVSRKKCVPRKSDVGEFPVPDRNAVVQNTNMKDFSGKWYITSGLNPTFDAFDC 243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            646 NIHVPNSYKQENKQEPYYLIVLKKEIDKLKVFMPKVESLINEEKKNIKTEGQSDNSEPST 705
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               625 -----NVACLQTCNNRPDET 651
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             596 KITKDENKPDEKILEV----SDIVKVQVQKVLLM-----NKIDELKKTQLILKNVELKH 645
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             572 -----KFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADAVDALKTCTCLLKECRLE- 625
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   789 H-----KY--ILVSHSTMNEKILKQ---YKITKEEESKLSSCDPLD 824
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   746 RTPDGGFFTRSAVQKFVQDPKYPGILYNHD--NEYLLYQDDWYILSSKVEN-----SPED 798
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         706 EGEITGQATTKPGQQAGSALEG---DSVQAQAQEQKQAQP-----PVPVPVPEAKAQVP 756
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         652 ECQI------KCGDLFENSVVDEFNECAVSRKKCVPRKSDVGDFPVPDPSVLVQ-- 700
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       840 KVGRDFNTFIKTDNTCGPEP-PLVERLEKKVEEGERT-----IIKEVEEI------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                825 LLFNIQNNIPVMY----SMFDSLNNSLSQLFMEIYEKEMVCNLYKLKDNDKIKNLLEEAK 880
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                799 YIF------VYYKGRNDAWDGYGGSV-----LYTRSAVL-----PESIIPELQTAAQ 839
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         700 -----KFDMKDFSGKWFITRGLNPTFDAFDCQLHEFHTEENKLVGNLSWRI 745
                                                                                                                                                                                                      992 KILPPIQSADLRTTGGRSSRP----LSAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKLV 1048
                                                                                                                                                                                                                                                      990 LE-EDINKL-----KKTLQLSFDLYNKYKLKLERLEDKKKTVGKYKMQIKKLT---LL 1038
                                                                                                                                                                                                                                                                                                      932 MEATEVEKLEGRALPIRKLMAVATHCETSPCHDRIREESSDDGIGRLGITRKRINGTELL 991
                                                                                                                                                                                                                                                                                                                                                         937 NIYQELIGQKSSENFYEKILKDSDTFYNESFTNFVKSKADDINSLNDESKRK-----K 989
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               IEEHEKEIKEIAKTIKFNIDSLFTDPLELEYYLREKNKNID--ISAKVETKESTEPNE-Y 403
                                                                                                                                                                                                                                                                                                                                                                                                          -----EEEVEKVRDKEVTLFSKLFEGFKELQRDEENFLRELSKEEMDVLDGLK 931
                                                                                                                                                                                                                                                                                                                                                                                                                                                               KV----STSVKTLSSSSMOPLSLTPQDKPEVSANDDTSHSTNLNNSLKLFENILSLGKNK 936
                                                     -----IAETENTLENTKILLKHYKGLVKYYNGESSPLKTLSEESIQTEDNYASL 1119
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	237 APEAFNYMDKFNEQEINLSLEELKDQRMLSRYEKWEKIKQHYQHWSDSLSEEGRGLLKKL 296	Дb	
	IEEEVEKVRDKEVTLFSKL	Qγ	
	177 IKNASDSDGQDLLFTNQLKEHPTDFSVEFLEQNSNEVQEVFAKAFAYYIEPQHRDVLQLY 236	Db	
	CGPEPPLVERI	Qy	
	129 LVIQSSEDYVENTEKALNVYYEIGKILSRDILSKINQPYQKFLDVLNT 176	Дb	
	SSKVENSPEDYTEVYYKGRNDAWDGYGGSVLYTRSAVLP	Qy	
	YGKDALLHEHYVYAK	뭕	
	GNLSWEIRTPDGGFFTRSAVQKF	Qy	
31;	Query Match 1.8%; Score 132; DB 1; Length 7.76; Best Local Similarity 17.2%; Pred. No. 0.061; Matches 139; Conservative 117; Mismatches 254; Indels 300; Gaps	Z B Q	
	170 83,	ŭ,	
	ed with intracellular pathogens, especially HIV.	8 6	
	ing domain of a second protein. The Iusion proceins are useruse specific killing of tumour cells or the killing of cells	2 6	
	comprising the anthrax protective dilityen binding an activity anthrax lethal factor and a sequence encoding an activity	22	
	In the construction of a nucleic acid which encodes a fusion	8	
	pp; English. ethal factor of Bacillus anthracis	Sq	
	getting toxin to specific terms, ey for strifing tumbur tori	ין ק	
	contains to the specific cells	PI	
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	ra N, Klimpel K, Leppla SH,	PH	
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	ular; HTV; human immunodeliciency virus;	X X	
	ctive antigen; cell killing; targetting; targeting; p	KW	
	ethal tactor of Bacillus anthracis. nthrax: Racillus anthracis; fusion protein; lethal f	K D	
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	R60178		
	78 78	RESU	
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Centromere-associated protein-E and related nucleic acid Claim 5; Page 66-67; 77pp; English. The present sequence represents CENP-E (centromere-associated protein-E) of Xenopus. The protein has at least one of plus end-directed microtubule motor activity, ATPase (adenosine triphosphatase) activity and microtubule binding activity. CENP-E is the motor that powers chromosome movement toward microtubule plus ends and is essential for congression of chromosomes during mitosis. Modulators of CENP-E can thus control cell proliferation. Agents that modulate CENP-E activity are lead the appeutic, bioagricultural and diagnostic agents, e.g. for treatment	WO9913061-A1. 18-MAR-1999; U19231. 10-SEP-1998; U19231. 11-SEP-1997; US-058645. (REGC) UNIV CALIFORNIA. Cleveland DW, Goldstein LSB, Sakowicz R, Wood KW; WPI: 99-229233/19.	Amino acid sequence of centromere-associated protein-E (CENP-E). CENP-E; centromere-associated protein-E; ATPase activity; plus end-directed microtubule motor activity; chromosome congression; microtubule binding activity; chromosome movement; mitosis; cell proliferation; tumor; metastasis; vascular malfunction; inflammatory disease; immune disease; anglogenesis; hypertension; restenosis; fungal infection; selective herbicide; fungicide; insecticide; plant growth regulator; activator; cancer cell marker. Xenopus sp.		1380LSKEEMEFLDEIKMEASEV 1398	1338 EEIEEEVEKEVEKVGRTEMTLFQRLAEGENELKQDEENFVRE 1380	1281 SVLPNSIIPELEKAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGE-RIIVKEV 1338 1885 FNVHNRYASNIVESAYLILNEWKNNIQSDLIKKVTNYLVDGNGREVFTDITL 636	.223 NQPGVLYNHDNEYLHY(:: : : 534IIKQSEKEYIRI	1165 KWYITSGLNPTFDAFDCQLHEFHTEGDNKLVGNISWRIKTLDSGFFTRSAVQKFVQDP 1222	1110 QIKCGDLEENSVVDEFNECAVSRKKCVPRKSDLGEFPAPDPSVLVQNENISDENG 1164	451GADLVDST	007 GRSSRPLSAFRSGFSKGIFDIVPL ::::::::::::::::::::::::::::::::::::	951 MAVATHCETSPCHDRIRFFSSDDGIGRLGITRKRINGTELLKILPPIQSADLRTTG 1006 :	908LQRDEENFLRELSKEEMDVLDGLKMEATEVEKLFGRALPIRKL 950 :: ::: : :: :::::: :: 297 QIPIEPKKDDIIHSLSQEEKELLKRIQIDSSDFLSTEEKEFLKKLQIDIRDSLSBEEKEL 356

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Best Local
1064 LREMENIKGTMESVEVKIADTKHELEETIRDKEQLLHEKKYFFQAMQTIFPI----
                                        935 -TEVEKLEGRALPIRKLMAVATHCFTSP------CHDRIRFFSSDDGIGRLGITRKRIN 986
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         of unwanted cell proliferation (typical of many examples are tumors and metastases; vascular malfunction; inflammatory and immune diseases; angiogenesis; hypertension; restenosis; and fungal infections), also as plant-protection agents (selective herbicides, fungicides and insecticides) and plant growth regulators or activators for improving yields. CENP-E is also a diagnostic marker for dividing cells, including cancer cells.
                                                                                                                                                                                    950
                                                                                                                                                                                                             839 QKVGRDFNTFIKTDNTCGPE----PPLVERLEKKV-----EEGER--TIIKEVE 881
                                                                                                                                                                                                                                                              920 LN-----GLLAGKV----PRDLL-----
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                                                                                                                                                                                                                                                                                                                                                     884
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                  661 FE--NSVVDEFNECAVSRKKCVPRKSDVGDFPVPDPSVLVQKFDMKDFSGKWFITRGLNP 718
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    575 SFELKIAELEEQLSVKAKNLEMVTNSREHSINAEVQTDVEKEVVR---KEMSVLGDSGYN 631
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               322 YRGRNDAWDGYGGSVIYTRSPTLPESIIPNLQKAAKSVGRDFNNFITTDNSCGPEPPLVE 381
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         503 REKT-------SLHQSMIDFGQISDSVQFHDSS------KENQLQYLPKD-----
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            459 SDMPSFPEID-DSVCTEFSDFDDALSMMDSNGIDAEWN------LASKVTH 502
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Local Similarity
                                                                                  IIMQEQSEQ1----LQLTDEVTHTQSKVQQTEEQYL-EMKKMHDDLFEKYIRNKSEAEDL
                                                                                                                          EI-EEEVEKVRDKEVTLFSKLFEGFKELQRDEENFLRELSKEEMDVLDGL---KMEA--- 935
                                                                                                                                                                       EKALEEKNA-LENEVTCLSEYKFLFNEVECLKNOISKASEEIMLLKQEGEHSASIISKQE 1008
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ----LERSLKENQET---NEFEILEKETQKEHEAQLIHEIGSLKKLV 775
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1.7%; Score 129.5; E
19.0%; Pred. No. 0.77;
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                                                                                                                                                                                                                                                         ----SRVELEKKVSEFSKQL 949
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Best Local Similarity 17.5
Matches 238; Conservative
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                                                                                                                                                                                         Claim 6; Fig 1; 51pp; English.

The sequence encoding the P195 protein of Plasmodium falciparum (N50530) and a peptide comprising at least one of its epitopes (see P50777) are claimed. Also claimed is a vaccine for inducing immunity to malaria comprising the novel peptide or P195 or a peptide comprising at least one epitope when derived from the new DNA sequence, together with a carrier.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1289
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1120 SVVDEFNECAVSRKKCVPRKSDLGEFPAPDPSVLVQNFNISDFNGKWYITSGLNPTFDAF 1179
                                                                                                                                                                                                                                                                                                                                                                                                                  (WELL ) WELLCOME FOUNDATION LTD.
Holder A, Sandhu J, Odink K, Lockyer M, Riveros-Moreno V;
WPI; 85-224845/37.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           21-FEB-1985; 301173.
22-FEB-1984; GB-004692.
26-SEP-1984; GB-024340.
21-FEB-1985; GB-004429.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    30-SEP-1991 (first entry)
Sequence of the P195 protein of Plasmodium falciparum.
Malaria vaccine; epitope; antigen; immunogen.
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                                                                                                                                                                                                                                                                                                                                       malaria
                                                                                                                                                                                                                                                                                                                                                      Cloned DNA sequence encoding plasmodium falciparum protein - useful for expressing the protein for use in vaccines against
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Plasmodium falciparum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    P50777 standard; Protein; 1654
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249
                                   184 VDQFNECAVSRKKCVPRKSDVGEFPVPDRNAVVQNFNMKDFSGKWYITSGLNPTFDAFDC 243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ANQEKVSLGEVNSLQSEMLRGERDELQTSCKALVSELELLRAHVKSVEGENLEITKKLNG 1380
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EIEEEVEKEV--EKVGRTEMTLFQRLAEGFNELKQDEENFVRELSKEEME 1386
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DEIEVLKAQLKAAEERLEIKDRDYFELVQTANTNLVEGKLETPLQADHEE------DSID 1490
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      HDNEYLHYODDWYILSSKIENKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNS--II 1288
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          QSIETQDELRAAQEELREQKQ------LVDSFRQQLLDCSVGISS---PNHDAV 1320
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       IDLNTQLQSLQAQSIEKSDLQKPKQDLEEGEVKLLLEMELLKGHLTDSQLSIEKLQLENL 1229
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FDI-VPLPS-----KNELKELTAPLLLKLV-----GVLACAFLIVPSA 1061
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GTFLLKILPPIQSADLRTTGGRSSRP----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PELE-----KAAKS----IGRDFSTFIRTDNTCGPEPALVERIEKTVEEGERIIVKEVE 1338
IENINELIEESKKTIDK---
                                                                                                                                                                                                                                                                                                                                                                                                    N50530
                                                                                                                                                                               1654 AA;
                                                                                           1.7%;
                                                                           %; Score 129; DB 1; Length 1654;
%; Pred. No. 0.34;
214; Mismatches 499; Indels 40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AΑ
  -NKNATKEEEKKKLYQAQYDLS-----IYNK 290
                                                                               Indels 408;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              --LSAFRSGFSKGI 1024
                                                                               Gaps
                                                                               67;
```

1231	PTFDAFDCQLHFFHTEGDNKLVGNISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLYNH	1174	Qу
1193	EKKKLSYLSRGI.HHLIAELKEVIKNKNYTGNSPSVNNTDV	1153	Db
1173	EFNECAVSR··KKCVPRKSDLGEFPAPDPSVLVQNFNISDFNGKWYITSGL	1123	Qy
1152	ENTKILLKHYKGLVKYYNGESSPLKTLSEESIQTEDNYASLENFKVLSKLEGKLKDNLNL	1093	Db
1122	KTCACLLKGCRIELAKCIANPACAANVACLQTCNNRPDETECQIKCGDLFENSVV	1068	Āδ
1092	NPKHVLONFSVFFNKKKEAEIAETENTL	1065	ממ
1067	RPLSAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKLVGVLACAFLIVPSADAVDAL	1011	Оу
1064	EQLESKLNSL	1015	Дb
1010	AVATHCFTSPCHDRIRFFSSDDGIGRLGITRKRINGTF	951	Qy
1014	LKDSDTFYNESSTNFVKSKADDINSLNDESKRKKLE-EDINKLKKT	970	дb
950	FEGFKELQRDEENFLRELSKEEMDVLDGL	891	Qy
969	PLSLTPQDKPEVSANDDTSHSTNLNNSLKLFENILSLGKNKNIYQELIGQKSSENFYEKI	910	Db
890		859	Qy
909	IGYVFILLMEIYEKEMVCNLYKLKDNDKIKNLLEEAKKVSTSVKTLSSSSMQ	858	Db
858	B	808	Ϋ́Ο
858		809	Db
807	YNHDNEYLLYQDDWYILSSKVENSPEDYIFVYYKGR	749	Qy
608	TPPAPVNNKTENVSKLDYLEKLYQFLNTSYICHKYILVSHSTMNEKILKQYK	757	Db
748	TRGLNPTFDAFDCQLHEFHTEENKLVGNLSWRIRTP	700	Qy
756	EGEITGQATTKPGQQAGSALEGDSVQAQAQEQKQAQPPVPVPVPEAKAQVP	706	Db
700	ECQIKCGDLFENSVVDEFNECAVSRKKCVPRKSDVGDFPVPDPSVLVQ	652	Оу
705	NIHVPNSYKQENKQEPYYLIVLKKEIDKLKVFMPKVESLINEEKKNIKTQGQSDNSEPST	646	Db
651	NVACLQTCNNRPDET	625	Qy
645	Ξ	596	ФФ
625	KFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADAVDALKTCTCLLKECRLE-	572	Qy
595	EKEL KYYKNLISKIENEIETLVENIKKDEEQLFEK	559	Db
572	SPRICCGLDSRGLQLFSHGKHNLSPAHSINQNVPKGNSGC	515	Qy
558	LTHPNTFASYENSKHNL-EKLTKALKYMEDYSLRNI	508	Db
514	RMALAPHSNFLANHETIKYYVGSKLPGHKRFSWGWEDY-FGSI	458	γQ
507	DSKFNNNIDLT	460	Дb
457	OTEMTLFQRLLEGFKELQQDEENFVRELSKEEKEILNELQMEAT	405	Qy
459	EPSKNIYTDNERKKFINEIKEK	404	Db
404	RDFNNFITTDNSCGPEPPLVERLEKTAEEGEKLLIKEAVEIEEE	350	Qy
403	IEEHEKEIKEIAKTIKFNIDSLFTDPLELEYYLREKNKNIDISAKVETKESTEPNE-Y	347	DЪ
349	Η	296	Qy
346	QLEEAHNLISVLEKRIDTLKKNENIKELLDKINEIKNPPPANSGNTPNTLLDKNKK	291	Db
0.67		244	Qy

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ΩĀ
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                                                                                                                                                                                                                                                                   QУ
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       DЬ
                                         20
                                                                                밁
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT
R95268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 γ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            QУ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    QY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Making cell which expresses nisin but does not contain natural nish gene - by providing cell with variant nish gene, and genes for nisin modification, secretion and immunity produced in the gene cluster nishBTCIPRK (see T29660 and T29661) of Lactococcus lactis includes the nish gene coding for pre-nisin A (R95267, see also R95263) and the genes for nisin modification, secretion and immunity. nish (R95268) and nisc (R95270) are believed to be involved in reactions that modify pre-nisin; nisT (R95269) is similar to a transport ATPase and is involved in translocation of nisin out of the cell; nisI (R95271) is involved in immunity to nisin out of the cell; nisI (R95271) is involved in immunity to nisin. Replacement of the natural, chromosomal copy of the nish gene with a variant nish gene allows prodn. of high levels of nisin care and in Lactococcus lactis hosts.
                                                                                                                                                                                                                                                                                                                                                                                 Matches
                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                           497
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Dodd HM, Gasson MJ;
WPI; 96-268616/27.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             30-MAY-1996.
20-NOV-1995; G02699.
19-NOV-1994; GB-023404.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Nisin A; nisB gene; antimicrobial; preservative; antibiotic; lantibiotic; protein engineering.
Lactococcus lactis strain NIZO R5.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     R95268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1316
392
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              N-PSDB; T29660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1231
                                                                                342
                                                                                                                                                           282
                                                                                                                                                                                              405
                                                                                                                                                                                                                                 225
                                                                                                                                                                                                                                                             350 PNLQKAAKSVGRDF--NNFITTDNSCGPEPPLV---ERLEKTAEEGEKLLIKEAVEIEEE 404
                                                                                                                                                                                                                                                                                                  171 IKYTNVYQIISEFCENDYQKYEDICETVTLCYGDEYRELSEQYLGSLI-----VNHYLI 224
                                                                                                                                                                                                                                                                                                                                             297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (BIOT-) BIOTECHNOLOGY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pre-nisin modification gene nisB product
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      01-AUG-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   R95268 standard; Protein; 993 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1194 NALESY----KKFLPEGID
                                                                                                                                                                                                                                                                                                                                                                                                    Local
         R----
                                     LPGHKRFSWGWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGKHNLSP 556
                                                                        FIEKYGVDQEVQITEL-----FDSTFGIGAPYNYNH----PRNDFYESEPSTLYYSEEE 391
                                                                                                                                                                                                                         SNLQKDLLS----DFSWNTFLTKVEAIDEDKKYIIPLKKVQKFIQEYSEIEIGEGIEKLKE 281
                                                                                                             FVRELSKEEKEILNELQMEATEVEKLFGRALPIRKLRMALAPHSNFLANHETIKYYVGSK 496
                                                                                                                                                 IYQEMSQILENDNYIQIDLISDSEINFDVKQKQQLEHLAEFLGNTTKSVRRTYLDDYKDK 341
                                                                                                                                                                                              VEKE----
                                                                                                                                                                                                                                                                                                                                     LHYQDDWYILSSQIENKPDDY-----IFVYYRGRNDAWDGYGGSVIYTRSPTLPESII 349
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              --NNVMTFNVNVKDILNSRFNKRENFKNVLESDLIPYKD 1352
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VGRTEMTLFQRLAEGFNELKQDEENFVRELSKEEMEFLD 1389
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LEKAAKSIGRDFSTFIRTONTCGPEPALVERIEKTVEEGERIIVKEVEEIEEEVEKEVEK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DNEYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDA-WDGYGGAVVYTRSSVLPNSIIPE 1290
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           -STHYGAESNTITTSQNVDDEVDDVIIVLIFGESEEDYDDLGQVVT---GEAVTTSVI--
                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           993 AA;
                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (first entry)
       ---EKYLSMYVEA---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -----DN-----ILSKIE---NEYEVLYLKPLAGVYRSLKKQLE- 1316
                                                                                                                                                                                        ---VEKVRDTEMTL---FQRLLEGFKE----
                                                                                                                                                                                                                                                                                                                                                                                            1.7%; Score 129; DB
18.8%; Pred. No. 0.15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             & BIOLOGICAL SCI RES COUNC
                                                                                                                                                                                                                                                                                                                                                                               99;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -----PKKPA----
                                                                                                                                                                                                                                                                                                                                                                               Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                DB 1; Length 993;
                                                                                                                                                                                                                                                                                                                                                                             244;
 ----VKNHNVINLDD 413
                                                                                                                                                                                                                                                                                                                                                                             Indels 196;
                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1231
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В
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                                                                           В
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                B
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               QΥ
                                                                                                                                               Matches
                                                                                                                                                                 Best Local
                                                                                                                                                                                Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                             26-OCT-1995.
12-APR-1995; U04463.
13-APR-1994; US-226972.
15-MAR-1995; US-404531.
(BAYU ) BAYLOR COLLEGE MEDICINE.
(TEXA ) UNIV TEXAS SYSTEM.
                                                                                                                                                                                                                                                              detecting persistent hyperinsulinaemic hypoglycaemia of infancy Disclosure; Page 99-104; 145pp; English.

Rat sulphonylurea receptor (SUR) DNA was ligated into eukaryoti expression vectors containing the SV40 virus promoter and used to transfect COS cells. Expression of the receptor was low when SUR CDNA (T01551) was used, but high when the genomic SUR sequence (T01568) was used; the product had the sequence given
                                                                                                                                                                                                                                 Sequence
 529 EMTSLRAFAVYTSISIEMNTAIPIAAVLITEV-----
                                                                                                                                                                                                                                                        İ'n
                                                                                                                                                                                                                                                                                                                                                                                            Sulphonyl:urea receptors and corresp. nucleic acids -
                                                                                                                                                                                                                                                                                                                                                                                                                  N-PSDB; T01568.
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Bryan LA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              W09528411-A1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Persistent hyperinsulinaemic hypoglycaemia of infancy; sulphonylurea receptor; diabetes; COS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Rat sulphonylurea receptor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     31-JAN-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     R77087 standard; Protein; 1582
                                 926 VLDGLKMEA--TEVEKLEGRALPIRKLMAVATHCFTSPCHDRIRFFSSDD-----GIGRL 978
                                                                                                     868 KVEEGERTIIKEVEEIEEEVEKVRDKEVTLFSKLFEGFK--ELQRDEENFLRELSKEEMD 925
                                                                   480 KLSQAQRTTL-----EYSNERLKQT---NEMLRGIKLLKLYAWENIFCSRVEKTRRK 528
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               728 RREK 731
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   864 RLEK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               684 FEDENIINKGEKGRV------ADVVVPFIRTRA--LGNEGRAFIREKRVS-----VE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              666 VDEFNECAVSRKKCVPRKSDVGDFPVPDPSVLV-----QKFDMKDFSG----KWFITRGL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         557 AHSINQNVPKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFIL-----SVASKADAVD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        414 LESHYQKM-----DLEKKSELQGLELFLNLAKEYEKDIFILGDIVGNNNLGGASGRFS 466
                                                                                                                                                                                                                                                        R77087
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            15
                                                                                                                                                                                                                                                                                                                                                                                                                                 95-373758/48
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NSKMTIRELIQSKEIPKEFYIVNGDNKVYLSQENPLDMEILESAIKKSSKRKDFIELQEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NPTFDAFDCQ-LHEFHTEENKLVGNLSWRIRTPDGGFFTR-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ---SAVQKFVQDPKYPGILY--NHDNEYLLYQD---DWYILSSKVENSPEDYIFV----Y
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               YKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDFNTFIKTDNTCGPEPPLVE 863
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NKTLFSNELRFLYEISLDDK--FGNLPWELIYRDFDYIPRLVFDEIVISPAKWKIWGRDV 623
                                                                                                                                                109;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              HANVMHTSIMRRKVLPFFTSTSHNEVLLTNIYIGIDEKEKFYARDISTQEVLKFYITSMY 565
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ALKTCTCLLKECRLELAKCISNPACAAN----VACLQTCNNRPDETECQIKCGDLFENSV 665
                                                                                                                                                              Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 867
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Cote GJ,
                                                                                                                                                                                                                                     1582 AA;
                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (first entry)
                                                                                                                                                            1.7%; Score 124; DB 1; 18.8%; Pred. No. 0.79;
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gagel RF, Nelson DA, Thomas PM;
                                                                                                                                             72;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SPELTSYHRTIVDSVERENENKEITSCEIVF -- LPENIR
                                                                                                                                             Mismatches
--GHVSFFKESDFSPSVAFASL 580
                                                                                                                                           221;
                                                                                                                                                                             Length 1582;
                                                                                                                                           Indels 178;
                                                                                                                                                                                                                                                                                                                                           eukaryotic
                                                                                                                                                                                                                                                                                                                                                                                               used in
                                                                                                                                                                                                                                                                                                                                                                           infancy
                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     683
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       803
                                                                                                                                         26;
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Search completed: October 14, 1999, 03:56:24 Job time: 2707 sec

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GenCore version 4.5
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OM protein - protein search, using sw model

Run on: October 14, 1999, 03:19:10; search time 33.23 seconds (without alignments)
1702.452 Million cell updates/sec

Title: US-09-075-375-4
Perfect score: 7495
Sequence: 1 MALSLHTVFLCKEEALNLYA......MEASEVEKLEGKALPIRKVR 1412

Scoring table: BLOSUM62
Searched: 122810 seqs, 40065486 residues

Database: PIR_60:*
1: pir1:*
2: pir2:*
3: pir3:*
4: pir4:*
```

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

4	4	4	4	41	4
G	4	w	Ν	1	0
126	126	126.5	126.5	127.5	127.5
1.,	1.7	1.7	1.7	1.;	1.7
993	1640	1282	2628	1790	4910
Ν	N	N	N	Ν	Ν
C48951	A24594	JE0120	S59413	S67593	S64942
nisB protein - Lac	probable major sur	glycoprotein A - m	probable membrane	transport protein	probable membrane

ALIGNMENTS

```
purine NTPase homolog - Archaeoglobus fulgidus
C;Species: Archaeoglobus fulgidus
C;Date: 05-Dec-1997 #sequence_revision 05-Dec-1997 #text_change 05-Jun-1998
C;Accession: H69378
                                                                                                 R;Klenk, H.P.; Clayton, R.A.; Tomb, J.F.; White, O.; Nelson, K.E.; Ketchum, K.A.; Dodsor: Fleischmann, R.D.; Quackenbush, J.; Lee, N.H.; Sutton, G.G.; Gill, S.; Kirkness, E.F. Glodek, A.; Zhou, L.; Oyerbeek, R.; Gocayne, J.D.; Weidman, J.F.; McDonald, L.
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                                       A; Authors: Utterback, T.; Cotton, M.D.; Spriggs, T.; Artiach, P.; Kaine, B.P.; Smith, H.O.; Woese, C.R.; Venter, J.C.
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A; Title: The complete genome sequence of the hyperthermophilic, sulfate-reducing
                                                                                   Nature 390,
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A; Residues: 1-462 <SHI>
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A;Status: preliminary: translated from GB/EMBL/DDBJ
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                                                                                A.; Zhou, L.; Ove
90, 364-370, 1997
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Pred. No. 6.6e-143;
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C;Accession: A42771
R;Galinski, M;R.; Medina, C.C.; Ingravallo, P.; Barnwell, J.W.
Cell 69, 1213-1226, 1992
A;Title: A reticulocyte-binding protein complex of Plasmodium vivax merozoites.
A;Reference number: A42771, MUID:92315338
A;Accession: A42771
A;Status: preliminary
                                                                                                                                                            reticulocyte-binding protein 1 - Plasmodium vivax C;Species: Plasmodium vivax C;Date: 04-Mar-1993 #sequence_revision 18-Nov-1994 #text_change
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               221;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels 221;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 886
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 550
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                                                                                                                                                                                                                                                                                                                                                                                                                              641
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            511
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A; Re A; No	A; Residues: 1-2 A; Experimental A; Note: sequence	es: 1-2829 <gal> es: 1-2829 <gal> mental source: Belem strain, merozoites sequence extracted from NCBI backbone (NCBIN:108114, NCBIP:108115)</gal></gal>
Qu Be Ma	Query Mat Best Loca Matches	Match 2.1%; Score 155.5; DB 2; Length 2829; Local Similarity 17.4%; Pred. No. 0.33; es 283; Conservative 242; Mismatches 573; Indels 529; Gaps 76
Qy	57	SYKTSSFSDSSHCKDKSQICSID1
Db	1110	TSNKNEILKSVKEVEDKLNLVEQNEDYKKVKNPENEKQLEAIRGSMSKLKE 1161
Qy	111	CRIELAKCIANP ;!
Db	1161	VINKHVSEMTQLESTANTLKSNAKGKENEHDLEELNKTK 1199
Qy	171	CGDLFENSVVDQFNECAVSRKKCVPRKSDVGEFP
ДĎ	1200	KLKKIAEELKEGTVNELKDANEKANKVE-PEPERNIIGH
Qy	225	YITSGLNPTFDAFDCQLHEFHMENDKLVGNLTWR
В	1257	AGKVVEEMNSLKTKIEKLIQETSDDSQNELVTTSITKHLENAKG 1301
Ωу	283	PDLPGALYNHDNEFLHYQDDWYILSSQIENKPDDYIFVYYRGRN-DAWDGYGGSVIYTRS 341
В	1301	YEDVIKRNEEDSIQLREKAKSLETLDEM 1328
Qy	342	FIT
Дb	1329	KKLVQQVNMNLQSAIQGNAGISKELNELKGVIELLISTNYSSILEYVKKNSSESVRFSQL 1388
Qy	373	CGPEPPLVERLEKTAEEGEKLLIKEAVEIEEEVEKEVEKVRDT 415
Db	1389	KNASARLAEAEKLKEQIVKDLDYSDIDDKVKKIEGIK
Qy	416	RLLEGFKELQQ
Db	1447	KOMCSSHMENAKEGE
Qy	456	ATEVEKLFGRALPIRKLRMALAPHSNFLANHETIKYY 492
Дb	1506	HAFHTVEAQVDKTKAFCESIVAYVTKMDNLFNESL-MKEVKVKCEKKNDEAEKY- 1559
Qy	493	
Db	1559	-SAKLKPYDGRI-KARVSENERKISELKEKAKVEKKESSQLNDVSTK 1603
Qy	553	LSPAHSINQNVPKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVAS
дb	1604	LQYFDSADKSMKSVLPISELGAEKSLDKV
Qy	613	CISNPACAANVACLQTCNNRPDETECQ-IKCGDLFENSVVD
DЪ	1660	AAKESYEKNLETVONEMSRINVEEGSLIDIDKKITDIENDLLKMKKQYEEGLLQKI 1715
Qy	670	QKEDMKDESGKWEITRGLNPTEDAEDCQ
DЪ	1716	LVGSEINALLDPSTSIFI-KLKLKEYDMTGDLKNYGVKM
Qy	729	EFHTEENKLVGNLSWRI
Db	1767	EIHGEFTKSYNLIETHLSNATDYSVTFEKAQSLRELAEKEEEHLRRREEEAIFLLNDIKK 1826
Qy	761	PGILYNHD
Db	1827	VESLKLLKEMMKKVSAEYEGMKRDHTSVSQLVQDMKTIVDELKTLNDISECSSVLNNVVS 1886
Qy	790	TPESIIPELQTAAQKVGRD
рb	1887	IVKKVKESKHADYRRDANSMYESMVTLANYFLSDEAKISSGMEFN 1931

CONSETVATIVE 17.3%; Pred. NO. 0.25; CONSETVATIVE CONSETVATIVE 208; Mismatches 497; Indels CONSETVATIVE 208; Mismatches 497; Indels CONSETVATIVE 208; Mismatches 497; Indels 209;	CONSETVATIVE 208; Mismatches 497; Indels CONSETVATIVE 208; Mismatches 497; Mismatches CONSETVATIVE 208; Mismatches 208; Mismatches CONSETVATIVE 208;	Oy 1097 LOTCN Db 984TAV	93	Qy 999 S-ADL : : Db 879 EISDI	943 RALP	883 IEEE 1:: 783 IKKE	NN	770 ILY 676 QL-	30 EKI	570 SYKE	628 CISN :: 543 -LTN	568 NSGC	518 -KIC 442 NLIT	Qy 463 FGRA: Db 393	Qy 420 FQR- 1 Db 344 FNHP	Qy 368 TTDN 1 Db 289 PYDK	Cy 324 -GRN Db 229 HGPN	178 FST	130 130
Pred. No. 0.29; ORSPILEVQDDWYILSSQIENKPDDYIFV; OGSPLYVEREYIGHSHYIMN; OGSPLYVEREYIGHSHYIMN; OGSPLYVEREYIGHSHYIMN; OGSPLYVEREYIGHSHYIMN; OGSPLYVEREYIGHSH	DRECH NO. 0.29; 47; Indels 396; Gation (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	RPDETECQ : RPLKRELYNVIRKLQ	::: ICEIISTLVSLG	RTTGGRSSRPLSAF : : : : LQSNQYIHQSETIK	TSPC	RDKEVTLFSKLFE : TTKQKNEE	PELQTAAQKVGRD QLLQTCVTDLNIDKKF	NEYLLYQDDWYILS : : KSKLVEQKLT	KQELHT KQELHT	SALLNNI	ACAANVACLQTCNNR	FPKDVALMVWEKWGQ :: : SLLQFVILWGE	SRRIPRYFRKSPRIC : LDNIPKN-NTFPRI-	PIPEVLDTETTHS	ERTTPGTDSLLSG	CGPEPPLVERLEKTA : : KKPPKIPKTS	YGGSVIY : QEGLIIEISF	IEYLSPPNVQY	Conservative OTFVQDPDLPGALY
7; Indels NKPDDYIFV YIMN YIMN YIMN INDELSEASION	NKPDDYIFVYER NKPDDYIFVYER NKPDDYIFVYER INMEDIFYYER IPMICKANKYGRDFNNFI	IKCGDLFENSVVDEF ; ; KQLKTLLEQQEFDNW	: : SKSTTVEALKDALK	FSKG FDKSNT	RIRFFS : NQKFES:	GFKELQRDEENFL :: : TLSKILADVQTLL	FNTFIKTDNTCGPEE : :: : ISNTVQQLSYIGWEN	KVENSPEDYIFVYY : DANNVLTDLLHTMK	WRIRTPDGGFFTRS	IELKTLSTVFTSE	ETECQIKCGDLF	AKTAIVAIFILSVAS	CGLDSRGLQLFSHGK :	.NHETIKYYVGSKLP : : : DQETI-YMIGDE	LQQDEENF TTKREDDLEDDDNV	EGEKLLIKEAV : : : : KSKKVLTKDTALTE	TRSP :: PKPTSTQKPPKTP	GSFLYFVPKEYI	%; Pred. No. (208; Mismatch NHDNEFLHYQDDWYI
	396; Ga VINYEKL RDFNNFI TPKESTI TTEMTL TVEMTL TV TSFIQLD NQNVPKG ITSSSIS CGRLELAK AEIALTK PRKSDVGSESVD PRKSDVGSESVD PRKSDVGSESVD PRKSDVGSESVD PRKSDVGSESVD RGLNPTF AAIKNLK PRKYPG	ECAVSRKKCVPRKSD	LKEKL	KELTAPLLL : : : : : : : : :	-RKRINGTFLL: : : : : 'LKTLIDSTTLE	SKEEMDVLDGLKME : : : KQSDTLSIPILQHY	ERLEKKVEEGERTI : : : SHSQWNFPKADPVI	ISPAPD	FFTRVIE	KDFSGKWF	VVDEFNECAVSRKKC : : : : VITKLNKCMLKLK	ADAVDALKTCTCLLK 	HNLSPAHS : HSIDRILKNIVLEHG	HKRFSWGWEDYFGSI : : : :: IHDWSYSDDDIDDTL	ELSKEEKEILNEI : :: : :: KLKEDEDDWIDD-	-EIEEEVEKEVEKVF : : : KTIEEHLRELLPPIT	LPESIIPNLQKAAKSV :	XHNWIXHSH	29; s 497; Indels ssQIENKPDDYIFVYY

YOSTO YOSTO YOSTO YOSTO YOSTO YOSTO YOSTO YOSTO AREA AREA AREA AREA AREA AREA AREA ARE	OY 1150 PSVLVQNFNISDENGKWYITSGLNPTFDAFDCQLHEFHTEGDN-KLVGNISWRIKTLD 1206
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Length 1935;

51;

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A;Title: Human cardiac myosin heavy chain genes and their linkage in the genome. A;Reference number: A93669; MUID:87260010
A;Recession: A27858
A;Molecule type: DNA
A;Residues: 1854-1865, 'A',1867-1935 <SAE>
A;Residues: 1854-1865, 'A',1867-1935 <SAE>
A;Cross-references: GB:X05631; GB:Y00362; NID:g34643; PID:g34644
R;Diederich, K.W.; Eisele, I; Ried, T.; Jaenicke, T.; Lichter, P.; Vosberg, H.P.
Hum. Genet. 81, 214-220, 1989
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A;Cross-references: GB:X04627
A;Cross-references: GB:X04627
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A;Cross: references: GDB:120215; OMIM:160760
A;Map position: 14912-14912
A;Map position: 115/3; 168/1; 177/2; 213/3; 244/3; 266/1; 299/1; 333/3; 380/1; 419/3; 24/3; 1390/2; 1451/3; 1507/1; 1548/3; 1651/3; 1719/3; 1761/3; 1853/3; 1885/3; 1930/3; 24/3; 1390/2; 1451/3; 1507/1; 1548/3; 1651/3; 1719/3; 1761/3; 1853/3; 1885/3; 1930/3; 24/3; 1390/2; 1451/3; 1507/1; 1548/3; 1651/3; 1719/3; 1761/3; 1853/3; 1885/3; 1930/3; 24/3; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 1390/2; 13
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A:Title: Identification of three developmentally controlled isoforms of human myosin hea A:Reference number: S09331; MUID:90235862
A:Accession: S09331
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A;Accession: I54254
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A;Residues: 653-720 CRESS
A;Residues: 653-720 CRESS
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A; Residues: 785-1076, 'E', 1078-1123, 'A', 1125-1702, 'DE', 1705-1935 <BOB>
A; Cross-references: EMBL: X51591; NID: 929467; PID: 929468
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Hum. Genet. 76, 47-53, 1987
A;Title: Construction of a human ventricular cDNA library
A;Reference number: S02229; MUID:87192738
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A; Molecule type: mRNA
A; Residues: 785-830, 'x',832-900, 'x',902-970, 'x',972-1040, 'x',1042-1076, 'E',1078-1110, 'x'
',1602-1670, 'x',1672-1702, 'DE',1705-1740, 'x',1742-1810, 'x',1812-1935 <BOW>
A;Cross-references: EMBL:X51591
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     submitted to the EMBL Data Library, January 1989 A; Reference number: $12458
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Nucleic Acids Res. 14, 2951-2969, 1986
A;Title: Characterization of diverse forms of myosin heavy chain expressed in adult huma A;Reference number: A93616; MUID:86176778
A;Accession: B23767
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     R; Bober, E.
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F;839-1279/Region: S2
F;1280-1935/Region: light meromyosin
F;1280-1935/Region: light meromyosin
F;129/Modified site: N6,N6,N6-trimethyllysine (Lys) #status predicted
F;184/Binding site: ATP (Lys) #status predicted
F;695,705/Active site: Cys #status predicted
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A; Residues: 1393-1702, 'DR', 1705-1935 <JAN>
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Note:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A; Residues:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A; Accession: S02229
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ues: 'fLIGVGELASG',1311-1312,'G',1314-1355,'R',1357-1358,'GD',1361-1438,'IQ',1441. the first ten codons of the sequence figure show the reverse complementary strai
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PID:g825694
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1326	TSQRAKLOTENGELSRQLDEKEALISQLTRGKLTYTQQLEDLKRQLEEEVKAK	1274	Db
1050	NGGRSSRPLSAFRSGFSKGIFDIVPLPSKNELKELTAPLLL	994	Qy
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993	ATEVEKLEGRALPIRKLMAVATHCFTSPCHDRIRFFSSDDGIGRLGITRKRINGTFLLKI	934	Qy
1231	RDLEEATLQHEATAAALRKKHADSVAELGEQIDNLQRVKQKLEKEKSEFKLELDDV	1176	Db
933	VRDKEVTLFSKLFEGFKELORDEENFLRELSKEEMDVLDGLKME	890	Qy
1175	ELEEEL-ESERTARAKVEKLRSDLSRELEEISERLEEAGGATSVQIEMNKKREAEFQKMR	1117	Db
068	EKKVEEGERTIIKEVEEIE	864	Qy
1116	GDLKLTQESIMCLENDKQQLDERLKKKDFELNALNARIEDEQALGSQLQKKLKELQARIE	1057	Дb
863	LQTAAQKVG	825	Qy
1056	DDLQAEEDKVNTLTKAKVKLEQQVDDLEGSLEQEKKVRMDLERAKRKLE	1008	ΔD
825	DWYILS	777	Qy
1007	EEMAGLDEIIAKLTKEKKALQEAHQQAL	969	Db
776	NPTFDAFDCQLHEEHTEENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHDN	717	Qy
969	RLEDEEEMNAELTAKKRKLEDECSELKRDIDDLELTLAKVEKEK	925	Db
716	CAVSRKKCVPRKSDVGDEPVPDPSVLVQKEDMKDESGKWEITRGL	672	Qy
924	1-5	865	Db
671	RLELAKCISNPACAANVACLQTCNNRPDETECQIKCGDLFENSVVDEFNE	622	Qy
864	IRAFMGVKNW-PWNKLYFKIKPLLKSAEREKEMASMKEEFTRLKEALE	818	Db
622	KTCTCLLKEC	564	Qy
817	HTKVFFKAGLLGLLEEMRDERLSRIITRIQAQSRGVLARMEYKKLLERRDSLLVIQWN	760	Db
563	WEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGKHNLSPAHSINQN	507	Qy
759	EGIRICRKGFFNRILYGDFRQRYRILNPAAIPEGQFIDSRKGAEKLLSSLDIDHNQYKFG	700	Db
506		458	Qy
699	EMTNLRST	658	DЬ
458	ELQMEAT -	408	Qy
657	VGLYQKSSLKLLSTLFANYAGADAP-IEKGKGKAKKGSSFQTVSALH-RENLNK	606	DЬ
407	KSVGRDFNNFITTDNSCGPEPPLVERLEKTAEEGEKLLIKEAVEIEEEVEK	349	Qy
605	GKSANFQKPRNIKGKPEAHFSLIHYAGIVDYNIIGWLQKNKDPLNETV	558	Дb
348	GYGGSVIYTRSPTLPESI	294	Qy
557	IDLIEKPMGIMSILEEECMFPKATDMTFKAKLFDNHL	521	Dр
293	TWRIKTLDGGFFTRSAVQTFVQDPDLPGALYNHD	249	Оу
520	DIAGFEIFDFNSFEQLCINFTNEKLQQFFNHHMFVLEQEEYKKEGIEWTFIDFGMDLQAC	461	ДĎ
248	DVGEFPVPDRNAVVQNFNMKDFSGKWYITSGLNPTFDAFDCQLHEF	203	Оу
sq	ch 1.9%; Score 146; DB 1; Length 1935; l Similarity 16.9%; Pred. No. 0.74; 238; Conservative 207; Mismatches 529; Indels 434; Ga	Query Mat Best Loca Matches	Qu Be Ma

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1802	GMNNILVUQIEIDETIRRCIRRCNHPTRMELEESCH	T / / T	ţ
	DAVDALKTCACLLKGCRIELAKCIANPACAANVACLQTCNNRPDETECQIKCG		Z 12
1770	EMVLL-RNEEKEALQKKIEYPSLTFLIEKAA	73	Db
1061	NELKELTAPLLLKLVGVLACAFLIVPSA	1002	Оу
72	PD —	1677	Db
1001	GRLGITRKRINGTFLLKILPPIQSAD	949	Qy
1676	LEKPIVDNASKNDVLNICSKFSLVPLSTEEVDNMRKEHTKILNILGDPSIDFLKEKCEKY	1617	Db
948	KMEATEVEKLFGRALPIR	912	Qy
1616	-PAPQLASAEKSSLQKRTLSDIENELKAL	1577	Db
912	EGERTIIKEVEEIEEEVEKVRDKEVTLFSKLFEGFKELQRD	856	Qy
1577	LVLVDKTEYQAMXDNASNKKSLIPSTKAL;-DEVTM	1543	Дb
855	IPELQTAAQKVGRDFNTFIKTDNTC	799	Qy
1542	EPNEYLDLNRIATTPSKEEIDNFCKQIGCYALDSKEYERLKNSLENPSKKFIEENAALLD	1483	ДĎ
798	HDNEYLD	774	Qy
1482	DVELLRSKLKGYHIIDTTTYNELVSNFNSPTLKFIEEKAKSKGYRLI	1436	Db
773		724	Qy
1435	EYLVKHAEQIQSKIISISDFNTLANDSMEDMASKLQKLEYQIVSNDEYIALKNTMEKP	1378	рb
723	ECAVSRKKCVPRK-SDVGDFPVPDPSVLVQKFDMKDFSGKWFITRGLNPTFDAF	671	Ωу
1378	LSDSAYEDLVKCKENPDMEFLKEKSAKLGHTVVSNKEYSELEKKLEQPSL	1328	Db
670		618	Qy
1327	YEDLVKCKENPDMEFLK-EKSAKLGHTVVSNEAYSELEKKLEQPSLEYLVEHAKATNHHL	1269	Db
617	PKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADAVDALKTCTCL	565	Qy
1268	EFLKEKSAKLGHTVVSNEAYSELEKKLEOPSLAYLVEHAKATDHHLLSDSA	1218	Db
564	ICSSRRIPRYFRKSPRICCGLDSRGL-QLFSHGKHNLSPAHSINQNV	519	Qy
1217	KLEQPSLAYLVEH	1179	Db
519	GRALPIRKLRMALAPHSNFLANHETIKYYYGSKLPGHKRFSWGWEDYFGSIVVAK	464	Qy
1179	YLVEHAKATNHHLLSDSAYEELVKCKENPDVEFLKEKSAKLGHTVVSNEAYSELEK	1123	Db
463	VEKVRDTEMTLFQRLL	409	ν
1122	HAKATNHHLLSDSAYEELVKCKENPDVEFLKEKSAKLGHTVVSNEAYSELEKKLEQPSLE	1063	Db
409	AEEGEKLLIKEAV-	364	QУ
1062	TNHHLLSDSAYEDLVKCKENPDMEFLKEKSAKLGHTVVSNEAYSELEKKLEQPSLEYLVE	1003	Db
364	RNDAWDGYGGSV	325	Qy
	YEDLVKCKENPDMEFIKEKSAKLGHTVVSNEAYSELEKKL	949	Db
N	VQTFVQDPDLPGALYNHDNEFLHYQDDWYILSSQIENKPDDYIFVYYR	276	Qy
948	E	900	Db
275	VANE MANDE SEAWELTSGLINETE DAE DOOLHEE HMENDKLYGNLTWRIKTLDGGEFTRSA	7+7	K

D D D		2 2 2 2	Na O	C;	RE	닭	0γ	Db	Qy	Db	Qy	Db	Qy	Дb	Qy	Db	Qy	Дb	Оу	Db -	Ωу	Db	Qy	Db	Qy	Дb	ОУ	Db	Qγ
Cross-references: GB.AE001153; GB:AE000783; NID:g2688419; PID:g2688426; TIGR:BB0512 Experimental source: strain B31	reliminary: type: DNA	Smith, H.(nomic sequent in the sequ	R;Fraser, C.M.; Casjens, S.; Huang, W.M.; Sutton, G.G.; Clayton, R.; Lathigra, R.; Wh R;Fraser, C.M.; Casjens, J.; Kerlavage, A.R.; Quackenbush, J.; Salzberg, S.; Hanson, M.; Vu Son, D.; Peterson, J.; Kerlavage, A.R.; Quackenbush, J.; Salzberg, S.; Hanson, M.; Vu ; Bowman, C.; Garland, S.; Fujii, C.; Cotton, M.D.; Horst, K.; Roberts, K.; Hatch, B. Nature 390, 580-586, 1997	al protein BB0512 - Lyme disease spirochete Borrelia burgdorferi (Lyme disease spirochete) -Feb-1998 #sequence_revision 13-Feb-1998 #text_change 05- n. G70163	NULT 9	803 ITVAFCKKFELTIEKVFNRSLRLK 8	1391IKMEASEVEKLEGKALPIR 1409	759EESCKKKLITLIKKVELLNNQMKVRDDNKTIALGTSKINYMDPR 802	TLFQRLAEGFNELKQDEENFVRELSKEEMEF	739SKYSTIDGTLRP	RSSVUPNS	704 SKIKKQIE TYNEDIKEYKKYLQHLKKNSDKKFIFV 739	KFVQDPN@FGVLYNHD-NEYLHYQDDWYILSSKIENKPED	667 DVSNIN 703	1153 LYQNFNISDENGKWYITSGLNPTEDAFDCQLHEFHTEGDNKLYGNISWRIKTLDSGFFTR 1212	608 KRKSSHLTSDTNILSDASDSTINDVNNEYDENGINKKLSYATTVGKENDVDDKNSP-IEV 666	NECAVSRKKCVPRKSDLG	560 IMPTLSAKVFRTYNASITLDQQLKRIKEVYGKTTYSLYSG-ETELHKSK 607	1039 LTAPLLLKLVGVLACAFLIVPSADAVDALKTCACLLKGCRIELAKCIANPACAANVAC 1096	21 -	980 ITRKRINGTFLLKILPPIQSADLRTTGGRSSRPLSAFRSGFSKGIFDIVPLPSKNE-LKE 1038	473 SVDSKEQKINDEKVNKIPLPINLESISSEDCYITLDFLGKDSIRYFNT 521	LFGRALPIRKLMAVATHCFTSPCHDRIRE	434 DFLALRV-GGEKDIDEEADTVGCCSLRVEHISFAHDIPFK 472	RLEKKVEEGERTIIKEVEEIEEEVEKVRDKEVTLFSKLFEGFKELQRDEE	382 AQSKFKGYKDLMKYENARKLKSCVHKIREDYKNKMKNKIIDKQLGTAVYLI 433	807 RNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKYGRDENTEIKTDNTCGPEPPLV 862	332 INISKDAPVPKLYDNMCGHNWGDIYHDNKVTWLAYYKDSINDQIKYTFLS 381	Ĩ

Query Match 1.9%; Score 144; DB 2; Length 2166; Best Local Similarity 16.8%; Pred. No. 1.2;

QУ

Db Db

OY 442 SKEEKEILNELQMEATEVEKLFGRA	1321	- σ
Qy 391 EKLLIKEAVEIEEEVEKEVE	1266NTLI-DDDIVKYENEIHKRIDSLKSIESTFDSIEKNLNDKVSGCIDKIANDFNLKY 1320 895 VTLFSKLFEGFKELQRDEENFLRELSKEEMDVLDGLKMEATEVEKLFGRALPIRKLMAVA 954	A P
Oy 347 SIIPNLOK-AAKSVGRDEN : : ::: : Db 626 TILENVEETTAESVTTFSNILEEIC	1207 MDQNFEIIEQRSKDILEFEKELQDKIKDCY-GFINSQFGEIKAGVEENIKNHFDVCIKKV 842 GRDFNTFIKTDNTCGPEPPLVERLEKKVEEGERTIIKEV-EEIEEEVEKVRDKE	A P
Query Match Best Local Similarity 17.9%; F Matches 206; Conservative 153;	738 V-GNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLYQDDWYILSSKVEN 794 1163 IESNFEERYSTFLIESEGAISK-IRDEIYKTLTSNDENLQIKISE 1206 795 SPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKV 841	A Q A
A; CIOSS TELEXENCES: GB: AEUU1424; GE A; Experimental source: clone 3D7 C; Genetics: A; Gene: PFB0915w	678 1115	₽ ¥
inary; nucleic ac DNA 58 <gar></gar>	641	δŸ
Salzberg, S.; Zl 126-1132, 1998 Dsome 2 sequence nber: A71600	602 ASKADAVDALKTCTCLLKECRLELAKCISN-PACAANVAC	ğ 13
C:Species: Plasmodium falciparum C:Date: 13-Nov-1998.#sequence_revis C:Accession: B71603 R:Gardner, M.J.; Tettelin, H.; Carv	552HNLSPAHSINONVPKGNSGCKEPKDVALMVWEKWGQEAK-TAIVAIFILSV 601	ğ ğ
RESULT 10 B71603 RESA-H3 antigen PFB0915w - malaria	7 519 ICSSRRIP	४८ व
Qy 1361 RLAEGFNELKQDEENFVRELSKEE	476 LADHSNFLANHETIKYYVGSKLPGHKRESWGWEDYFGSIVVAK 518	₽ ₹
1302 1757	7 428 KELOQDEENFVRELSKEEKEILNELQMEATE-VEKLFGRALPIRKLRMA 475 :	9 ×
1255 DYIF : : 1701 EMVD	7 385KTAEEGEKLLIKEAVEIEBEVEKEVEKVRDTEMTLFQRLLEGF 427 	₽ 5
1212 1641	7 335SVIYTRSPTLPESIIPNLOKAAKSVGRDENNFITTDNSCGPEPPLVERLE 385	ρ Υ
Qy 1165 KWYITSGLNPTFDAFDCQLHEFHT : : : : : : : : : : : : :	Y 279 FVQDPDLPGALYNHDNEFLHYQDDWYILSSQIENKPDDYIFVYYRGRNDAWDGYGG 334 :	B S
Oy 1119 NSV:VDEFNECAVSRKKCVPR- :: : ::: : Db 1522 TNITGKVDEFVDFVNNKQSIIDSW	Y 219 FNMKDFSGKWYITSGLNPTFDAFDCQLHEFHMENDKLVGNLTWRIKTLDGGFFTRSAVQT 278 : : ::	Db Qy
Qy 1059 PSADAVDALKTCACLLKGCRIELA : : : : : : : : : : : : : : : : : : : : : : : : : : :	Y 159 LQTCNNRPDETECQIKCGDLFENSVVDQFNECAVSRKKCVPRKSDVGEFPVPDRNAVVQN 218 ::: :: : :: : 567 IESFYNMFEKTQETLKVD-FNTSLINKDEIGK 599	dd Qy
	Y 99 LEKOWROFIQLAIVLVCTFVIVPRVDAVDALKTCACLLKECRIELAKCIANPSCAANVAC 158 ::: :: ::	Qγ
95 5 1379	44 RSNNGYENSERLETSYKTSSESDSSHCKDKSOICSIDTSEEEIQREDLKRGMTLI 98	ду Др
_	Matches 268; Conservative 275; Mismatches 556; Indels 500; Gaps 71;	

Qy Db

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80 AG 64

В Qy В γQ Дb Qy В Qy g QУ Вр Qy Вþ δÃ Ъ Qγ В ŲΫ 멍 QУ В ΔÃ

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RALPIRKLRMALAPHSNFLANHETIKYYVGSKLPGHK 501
                                                                                                                                                                             IQENTITNDTI---EEKLEELHENVLSAALENTQSEE 682
                                                                                                                                                                                                                                                                                  Score 143.5; DB 2; Length 1558; Pred. No. 0.77; Indels 413; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             rucci, D.J.; Cummings, L.M.; Aravind, L.; Koonin, E. L.; Sutton, G.G.; Clayton, R.; White, O.; Smith, H
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      a parasite (Plasmodium falciparum)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        #TEGDN-----KLVGNISWRIKTLDSGFFT 1211
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NLKNLESDLNNVEKDVIRLKEESYHNVSSHLKLLEEDF 1436
                                                                                                                                                                                                                    ---NFITTDNSCGPEPPLVE-------RLEKTAEEG 390
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GB:AE001362; NID:g3845307; PID:g3845309; TIGR:PFB091
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  id sequence not shown; translation not shown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ision 13-Nov-1998 #text_change 13-Nov-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EM-----EFLDEIK 1392
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SLKHS----TSEIETIKSGLQEQIDK-----FEV 1791
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SWFLNIKDDVKDWQEKSYSTIEKRINLAELGIKSFEND 1581
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NDKIQNLEYDLSKN-----
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RLGITRKRING------988
                                                                   LETVEQAEEESASTITEIFENLEENAVESNENVAENL 739
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ILNCDVQFNKFISEIK 1830
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TVEEGERIIVKEVEEIEEEVEKEVEKVGRTEMTLFQ- 1361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                INKNISEFSEKISLYRNNIETSIENEYNSFSKSIKSD 1756
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TRSSV------LPNSIIPELEKAAKSIGRD 1301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        VKFLTQQKDLEDKIFELNQKLEHEFTTLSSNLDKVRR 1700
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NEYLHYQDD--------WYILSSKIENKPE 1254
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SNLQNEAKKIEQSVHLDFKNIGE-SLNLKVLDLEKFV 1640
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ?----KSDLGEFPAPDPSVLVQNFNISDF-----NG 1164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AKCIANPACAANVACLQTCNNRPDETECQIKCGDLFE 1118
                                                                                                                        EKVRDTEMTLFQRLLEGFKELQQD----EENFVREL 441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             the human malaria parasite Plasmodium falciparum.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EQKMKDDKENFYLDFTKEFSSKKKDMQSEIA---LME 1521
                                                                                                                                                                                                                                                                                       50;
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RESULT S06006

11

myosin beta heavy chain, cardiac muscle - rat
N;Contains: myosin ATPase (EC 3.6.1.32)
C;Species: Rattus norvegicus (Norway rat)
C;Date: 31-Dec-1993 #sequence_revision 31-Dec-1993 #text_change 13-Feb-1998
C;Accession: \$06006; \$07536; 167441
R;Kraft, R; Bravo-Zehnder, M; Taylor, D.A.; Leinwand, L.A.
Nucleic Acids Res. 17, 7529-7530, 1989
Nucleic Acids Res. 17, 7529-7530, 1989 A;Title: Complete nucleotide sequence of full length cDNA for rat beta cardiac myosin A;Reference number: S06006; MUID:90016823
A;Accession: S06006 A; Cross references: GB:M32698; NID:g205598; PID:g205599 C; Superfamily: myosin heavy chain; myosin motor domain h C; Keywords: actin binding; ATP; cardiac muscle; coiled c F:88-766/Domain: myosin motor domain homology https://domain.myosin.motor.omain.homology (P-loop) F;178-185/Region: nucleotide-binding motif A (P-loop) F;548-885/Region: actin binding #status predicted F;55-677/Region: actin binding #status predicted F:839-1935/Domain: coiled coil #status predicted <COI>F;839-1935/Demain: coiled coil #status predicted <COI>F;839-1935/Region: S2 F:1280-1935/Region: S2 F:1280-1935/Region: Jight meromyosin A; Molecule type: mRNA A; Residues: 1-950, 'RK, 953-1935 <MCN> R; Mahdavi, V; Lompre, A.M.; Chambers, A.P.; Nadal-Ginard, B. Eur. Heart J. 5, 181-191, 1984 A; Tittle: Cardiac myosin heavy chain isozymic transitions during A; Reference number: 173305; MUID: 85179510 A; Recession: 167441 A;Cross-references: EMBL:x15939; NID:g56656; PID:g56657 R;McNally, E.M.; Kraft, R.; Bravo-Zehnder, M.; Taylor, D.A.; Leinwand, L.A. J. Mol. Biol. 210, 665-671, 1989 A;Title: Full-Length rat alpha and beta cardiac myosin heavy chain sequences. Compari A; Molecule type: mRNA A; Residues: 1-1935 < KRA> A;Reference number: S07535; MUID:90133919 A;Accession: S07536 A;Status: nucleic ació sequence not shown A; Status: translation not shown F;129/Modified site: N6, N6, N6-trimethyllysine (F;184/Binding site: ATP (Lys) **status predicted F;695,705/Active site: Cys **status predicted A; Molecule type: mRNA A; Residues: 1871-1935 <RES> A:Status: preliminary: translated from GB/EMBL/DDBJ Qγ В Š. B Qγ В Ş В Ş Вb Matches Query Match
Best Local Similarity 217 QNFNMKDESGKGYITSGLNPT--------FDAFDCQLHE---FHMENDKL 255 375 PDGTE-----5,NDKSAYLMGLNSADLLKGLCHPRVKVGNEYVTKGQNVQQVAYAIGALA 428 166 PDETECQIKCGTIFENSVVDQFNECAVSRKKCVPRKSDVGEFPVPDRN------AVV 216 648 SALH-RENLNKLMTNLRST-486 256 MTFKAKLYDNHLGKSNNFQKPRNIKGKQEAH----FSLIHYAGTVDYNILGW------L QQFFNHHMFVLEQEEYKKEGIEWTFIDFGMDLQACIDLIEKPMGIMSILEEECMFPKATD 545 VGNLTWRIKTLDGGFFTRSAVQ-TFVQ----KSVYEKMEN--WMVTR-INATLETKQPRQYFIGVLDIAGFEIFDFNSFEQLCINFTNEKL 485 EAVEIEEEVEKEVEKVRDTEMTLFQRLLEGFKELQQDEENFVRELSKEEKE-----QKNKDPLNETVVGLYQKSSLKLLSNLFANY---YTRSPTLPESII: NLOKAA-KSVGRDFNNFITTDNSCGPEPPLVERLEKTAEEGEKLLIK 396 PDLPGALY-NHDNEFLHYQDDWYILSSQIENKPDDYIFVYYRGRND----AWDGYGGSVI 337 247; Conservative 218; Mismatches 1.9%; Score 142.5; 16.7%; Pred. No. 1.2; -----HPHFVRCIIPNETKSPGVMDNPL 688 ---AGADAP-VDKGKGKAKKGSSFQTV 647 (Lys) #status predicted DB 1; 558; coil; Indels 459; Length 1935; homology heart; hydrolase; methyl development and under Gaps ò 282 448 56;

m 80 1
KLPGHKRESWGWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGKHNLS 555 RESULT

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Qy Qy

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Дb Qy Вр 20 В Q Дb Qγ g δÃ 밁 QY 밁 Š Db δÃ B δÃ В Qy 밁 VQ 밁 Qy Db Ωy Дb δλ. B

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728 VSKAKNEAERKECE-----KLLTPE-----ARKLLEEAKKSVKAYKDCVLRARNE 772
                                                                3 FDCQLHEFHTEENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILY------ 773
                                                                                                                                                                                                    3 NSVVDEFNECAVSRKKCVPRKSDVGDFPVPDPSVLVQKFDMKDFSGKWFITRGLNPTFDA 722
                                                                                                                                                                                                                                                                                                                                    7 LLKEC-----RLELAKCISNPACAANVACLQTCNNRPDETECQ----IKCGDLFE 662
                                                                                                                                                                                                                                                                                                                                                                                                           5 LKAYKDCASQAKTEAEKKECEKLLTPE-----AKKLLEEEAKESVKAYLDCVSQAKT-EA 628
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1 CKFPKDVA------LMVWEKWGQFAKTAIVAIFILSVASKADAVDALKTCTC 616
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   O QQALDCLKNAKTDEERKECLKN---IPQDLQKELLADM-----SVKAYKDCVSR 515
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                54 GRALPIRKLRMALAPHSNFLANHETIKYYVGSKLPGHKRFSWGWEDYFGSIVVAKICSSR 523
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    12 KECLKLINDPEIREKFRKELELOKELQEYKDCIKNAKTEAEKNECLKGLSKEA--IERLK 469
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            74 ----EIQIRQ---EYNRLLKERNEKGNMIDKNLF-----FNDDPN--RTLYN----- 312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Match
1.9%; Score 142.5; DB 2; Length 1819;
Local Similarity 19.0%; Pred. No. 1.1;
es 267; Conservative, 199; Mismatches 524; Indels 417; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ule type: DNA
ues: 1-1819 <ARN>
-references: GB:AE001481; GB:AE001439; NID:g4155005; PID:g4155007
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   es: Helicobacter pylori

ty: strain J99

12-Feb-1999 #sequence_revision 12-Feb-1999 #text_change 12-Feb-1999

sion: A71928

R.A.; Ling, L.S.L.; Moir, D.T.; King, B.L.; Brown, E.D.; Doig, P.C.; Smith, D. C.; Gibson, R.; Merberg, D.; Mills, S.D.; Jiang, Q.; Taylor, D.E.; Vovis, G.F. 397, 176-180, 1999
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                                                                                                                                                                                                                                                                           9 EKKECEKLLTPEAKKKLEEAK----KSVRAYLDCVSKAKNEAERKECEKLLTPEAKKLLE 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               6 ARNEKEKQECEKLLTPEAKKLLENQALDCLKNAKTDEERKECL-KNLPKDLQSDILAKES 574
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               4 RIPRYFRK-----SPRICCGLDSRGLQLFSHGKHNLSPAHSINQNVPK-----GNSG 570
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        12 -----YLNIAEIEDK--NPLRAEYECISN-----GGN--YEECLKLIKD--KKLQDQMK 354
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             æ
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       : Genomic sequence comparison of two unrelated isolates of the human gastric pence number: A71800; MUID:99120557
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                                                                                                                                   NQALD----CLKNAKTDEERKECLKDLP-------KDLQKKVLAKESVRVYLDC 727
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EKEVEKVRDTEM-TIFQRILEGFKELQQDEENFVRELSKEEK-EILNELQMEATEVEKLF 463
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    KTLEAYNDCI----KNAKTEEERIKCLDLIKDENLKKSLLNQQKVQVALDCLKNAKTDEER 411
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SVGRDFNNFITTDNSCGPEPPLVERLEKTAEEGEK--LLIKEAVEI------EEEV 405
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            HYQDDWYILSSQIENKPDDYIFVYYRGRNDAWDGYGGSVIYTRSPTLPESIIPNLQKAAK 357
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                                                                                                                                                                                                                                                                                                   nitrite reductase (NAD(P)H) large subunit - Aquifex aeolicus
C;Species: Aquifex aeolicus
C;Date: 08-May-1998 #sequence_revision 08-May-1998 #text_change 08-May-1998
C;Accession: C70319
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A;Molecule type: DNA
A;Residues: 1-1002 <AQF>
A;Cross-references: GB:AE000678; NID:g2982921; PID:g2982926; GB:AE000657
A;Experimental source: strain VF5
C;Genetics:
A;Gene: nirB
                                                                                                                               A;Title: The complete genome of the hyperthermophilic bacterium Aquifex aeolicus A;Reference number: A70300; MUID:98196666
A;Accession: C70319
A;Status: preliminary; nucleic acid sequence not shown; translation not shown
                                                                                                                                                                                                                                                                        R;Deckert, G.; Warren, P.V.; Gaasterland, T.; Young, W.G.; Lenox, A.L.; Graham,
                                                                                                                                                                                                                                    Nature 392, 353-358, 1998
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   995 ERKECE----KLLIP----EARKLLEEAKESVKAYKDCVSRARNE----KEKQECEKLL 1041
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ERKECEKLLTPEA --- RKLLEEAKESVKAYKDCVSRARNEKEKQECEKLLTPEAKKLLEN 944
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CLEGLSDSERALILGIKRQADEVDRIY 1415
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -DCQLHEFHTEGDNKLVGNISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLYNHDNEYLHY 1238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -VVDEFNECAVSRKKCVPRKSDLGEFPAPDPSVLVQNFNISDFNGKWYITSGLNPTFDAF 1179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EAEKKRCVKDLPKDLQKKVLAKESVKAYLDCVSRARNEKEKKECEKLLTPEARKLLEESK 1161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            E-----MTLFQRLAEGF-NELKQDEENFVRELSKEE------MEFLDE-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RQQKDKAIKDCLK--NADPNDRAAIMKCLDGLSDEEKL--KYLQEAREKAVLDCLKTART 1331
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PEARKLLEQEVKKSVKAYLDCVSRARNE------KEKQECEKLLTPEARKFLEKQ 1275
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DEEKRKCQNLYSDLIQEIQNKKAQNKQN---QLSKTERLHQASECLDNLDDPTDQEAIEQ 1388
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGERIIVKEVEEIEEEVEKEVEKVGRT 1354
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   QDDWYILSSKIENKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPE----LEKA 1294
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        -----IKMEASEVEKLF 1402
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		SDTCSFGVIPNKSDAVRVAKYLSERLKLD	Db
	_	PLLLKLVGVLAC	Qy
	/S 842	790 AKDFRQIAELARKYGSRELR-LSVYQNIYIPNIPEENLNPLLGEEIFEKFSTV	Db
٥	T 1040	L-RTTGGRSSRPLSAFRSGFSKGIFD	Qy
	CK 789	GIINLRNGTYAVC	Дb
	998	942 GRALPIRKLMA''ATHCFTSPCHDRIRFFSSDDGIGRLGITRKRINGTFLLKILPPI	Qy
	Ł 748	RFREE	DЬ
	F 941	885 EEVEKVRDKEVTLFSKLFEGFKELQRDEENFLRELSKEEMDVLDGLKMEATEVEKLF	Qy
	ID 695	641 RKLNVAVLGSQTDCINALFNDVCFYLSEKDGKLGFNLYLGGKIGSGGPKKAIDMD	Дb
	E 884		QΥ
	P 640	583EALNRVGLSTLQTGMDNVRNVTGDPLTGLAEDSLIDTLRLSQEITNIFLGKKKYADLP	Ф
	G 842	AWDGYGGSV	γо
	- 583	`≒.	Db
	G 806	GGF-FTRSAVQKFVQDPKYPGI	QΨ
	V 535	478 -IKKELHPEDLEFKKRLEKYFSEGELENIPEEDRDV-RLKWYGIFYRKATPGYFMVRIR	Db
	T 747	PTFDAFDCQLHEFHTEEN	Qy
	- 478	444 TKASTSCGSCIELVEBILKHYVKEKPKRVNKIEV	Db
	w 710	ECQIKCGDLFENSVVDEFNECAVSRKKCVPRKSDVGDFPVPDPSVLVQKFD	Qy
	R 443	412GC-KTLEEIQER	Db
	E 650	AKCISNPACAANVACLQTCNNRPD	Ϋ́Ο
	- 412	368 G-DVRGNNYLLDLIKSGK-DISEERPYFLIKHILPKGTTGVEELKD	Db
	K 590	ILSPAHSINQN	Qy
	Y 367	311 TGSLTYAMLKVAGVNLFSAGEINEKDGDEVVAFLDNGRSLYRKAVIRNNKIVGTILY	Дb
	537	IPR)	Qy
	Y 310	NDYLETSASDIYAVGECIEHRGKTYGLVAPIME-QVKVCAH	Db
	Y 492	EKLFGRALPIRKL	Qy
	V 254	201 IKVLLKKVTEEILGEKKAEGVRFSDGDELLADEVIIATGIRPNVEVGVNSGLKV	Db
	2 444	/EIEEEVEKEVEKVRDTEMTLFQRLLEGFKE	Qy
	3 200	147 AVVIGGGLLGIEVTKALRDIGLEVFLVHILDTLMEQQLDKTASELLRKDLEDMG	Дb
	390	SVGRDFNNFITTDNSCGPEPPLV	Qу
	R 146	90 LVTKDGEFYRY - DKAIIATGSKPFIPPSIKGVNKKGVFT-YRTAKDVFBILDVAF	Db ?
	₹ 340	LYNHDNEFLHYODDWYILSS	04
54;	Gaps	Query Match 198; Score 141; DB 2; Length 1002; Best Local Similarity 20.18; Pred. No. 0.59; Matches 192; Conservative 148; Mismatches 314; Indels 300; G	Qu Be

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	SVLVQKFDMKDFSGKWFITRGLNPTFDAFDCFDAFDC	Db 847 TASMOSAKSSLDAKVTEITKKLETFNKDKDVKFKELEQTRKDIDEFINTNKTN 899	CQI-KCGDLFENSVVDEFNECAVSRKKCVPRKSDVGDFPV 69	OY 579 LMYWEKWGQFAKTAIVAIFILSVASKADAVDALKTCTCLLKECRLELAKCISNPACAA-N 637 DD 797 KSTKECLUNSISSANTLLAKLTDKDNTJOOAKTELEKEVOKANDAVANN 846	753 TS		460 EKLFGRALPIRKLRMALAPHSNFLANHETIKYYYGSKLPGHKRFSWGWEDYFGSIVVAKI 51	QY 414	63/ EANKSIKEQLSDSI	354 KAAKS	Db 595 LINAKDDKKSVTKSSKKSEIIAANDELKOALDKAKVAKDQID 636	310 TENEDDDVIETVVVDGDVIENKOONGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG	MENDKLVGNLTWRIKTLDGGFFTRSAVQTFVQDDDLPGALYNHDNEFLHYQDDWYILSSQ	Db 505NDSEIVKAKESLNAEITNANKAVNQNDNASMQSAKSSLDDKVTKIQNQLTEFN 557	190	445 KSVTNSSNKSDI	NPSCAANVACIOTCAANVECTOTE CONTROL	1.9%; Score 140.5; DB 2; Length 1	1089-1120/Domain: tetratricopeptide repeat homology	F;993-1026/Domain: tetratricopeptide repeat homology <ttt> F;993-1026/Domain: tetratricopeptide repeat homology <ttt></ttt></ttt>	1-24/Domain: signal sequence **tatus predicted <sig> 25/1302/Broduct: surface located results </sig>	Genetic code: SGC3 Superfamily: surface-located mem Keywords: dumlication: membrane	Genetics:	Residues: 1-130 Cross-reference	Accession: JC6009 Molecule type: DNA	;; ₽ Ħ	;Ladefo	<pre>surface-Located membrane protein lmp3 precursor - Mycoplasma hominis (SGC3) C;Species: Mycoplasma hominis C;Date: 15-Aug-1996 #sequence_revision 18-Oct-1996 #text_change 05-Dec-1998 C:Accession: TC6000</pre>
Qy 915 FLRE-LSKEEMVLDGLKMEATEVEKLEGRALPIRKLMAVATHGFTSP 961	VICRNEFDKNEKGY	874 R	QY 016 VLYIKSAVLPESILPELQTAAQXYGRDFNTEIKTDNTCGPEPPLVERLEKKVEEGE 873 V	276 GIODEVFTITTKYATKSLKGRSFYLDELTEYFAKYICKELNLPITNILFYGGG	Db 233 VKENKKNKYAKEYIDDKTLEKLENNDNGWNKEIFSLIHGDLS 275 QY 782QDDWYILSSKVENSPEDYIFYYYKGRNDAWDGYGGS 817	Qy 732 TEENKLYGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHDNEYTLY 782	Db 173 FKGDVSFEELYQLMQKYTMCIPSVTMWKKAGSLKGGLPDVSLFDHSKTTCAIACCLYQMY 232	119 ETVCIGELTENLYKNGFKYSLKPLNVSDAIFTDKPYPNENYKELFSKFEDEIKD	Qy 650 ETECQIKCGDLFENSVVDEFNECAVSRKKCVPRKSDVGDFPVPDPSVLVQKFDMKD 705	Best Local Similarity 20.0%; pred. No. 0.49; Matches 180; Conservative 96; Mismatches 228; Indels 394; Gaps 45;	Query Match 1.9%: Scorp 140. DB 2.		xype: DNA 1-800 <bui;> srences: GB:U67607; GB:L77117; NTD:a1592244. pTD:a1500575.</bui;>	A; McCession: r04300 A; Status: preliminary; nucleic acid sequence not shown; translation not shown	Title: Comp Reference n	Hurst, M.A.	R;Bult, C.J.; White, O.; Olsen, G.J.; Zhou, L.; Fleischmann, R.D.; Sutton, G.G.; Blak; Reich, C.I.; Overbeek, R.; Kirkness, E.F.; Weinstock, K.G.; Merrick, J.M.; Glodek	C; Date: 13-Sep-1996 #sequence_revision 13-Sep-1996 #text_change 10-Oct-1997 C; Accession: F64508	5 5	Db 1179 TKKLETFNKDKEAKFNELKK 1198	Qy 899 SKLFEGFKELQRDEENFLRELSK 921	Db 1127LLAKLTDKDNTIQQAKTELEKEVQKANQAVASNNTVSMQSAKSSLDTKVTE1 1178	QY 857 PEPPLVERLEKKVEEGERTIIKEVEEIEEEVEKVRDKEVTLF 898	: : : : DKAQADNLARSTKEQLNKSISSANT	Qy 803 YYKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDFNTFIKTDNTCG 856	AKVTEITKKLETTNKDKDVKFRELEQTRKDIDEFINTNKTNPNYSTLISELTSKRD	QY 765 PKYPGILYNHDNEYLLYQDDWYILSSKVENSDEDYIFV 802	QY 726 QLHEFHTEENKLVGNLSWRIRTPDGGFFTRSAVQKFVQ

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HS70_SOYBN RRPL_BTV10

P26413 glycine max P13840 bluetongue

GenCore version 4.5 Copyright (c) 1993 - 1998 Compugen Ltd.

OM protein - protein search, using sw model

Run on: October 14, 1999, 03:57:21; Search time 26.17 Seconds (without alignments) 1525.213 Million cell updates/sec

Title: Perfect score: Sequence: US-09-075-375-4
7495
1 MALSHTVFICKEEALNLYA.....MEASEVEKLFGKALPIRKVR 1412

Scoring table: BLOSUM62

Searched: 77977 seqs, 28268293 residues

Database : SwissProt_37:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

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A 1395	346KEVEKVGRTEMTLFORLAEGFNELKODEENFVRELS	
134	1298 IGRDFSTFIRTDNTCGPEPALVERIEKTVEEGERIIVKEVEEIEEEVE	Db Db
CD 1348	1331 EHDDWLIQRGQRGDLEKALKD	Db
S 1297	YILSSKIENKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIII	Qy
 -	TKVVADL	Db
	1178 AFDCQLHEEHTEGDNKLVGNISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLYNHDNEYLH	Qy
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10 (938IEESKSSDLGKKLTARQEEISNLKEENMSQSQAITSVKS	Db
	747 TPDGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLYODDWYILSSKVENSPEDYTFVYYKG	Qy
93	82 QILTQLAELSKNYDSLEQESAQLNSGLKSLEAEKQLLHTENEELHIRL	Db
7	695 SVLVQKFDM-KDFSGKWFITRGLNPTFDAFDCOLHEFHTEENKT.VGNT.SWBTR	Qy
ω	ENLTQQNMTLIDNVQKLMHKHVNQESKVSELKEVNGKLSLDLKNLR	Db
S		Qy
α	775 SKAMKQSFTSLVNSYQSISNLYHELRDDHVN	Db
m	KADAVDALKTCTCLLKECRLELAKCISNPACAANVACLQTCNNRPDETEC	Qy
Q 7	SDAKNTNAILSSELTKSSEDVKRLTANVETL	Db
VA 60	553 NLSPAHSINQNVPKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILS	Qy
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Çī Cī	496 KLPGHKRESWGWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGKH	Qy
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QY 342 PTLPESIIPNLQKAAKSVGRDENNFITTDNS	ט ט
Qy 283 PDLPGALYNHDNEFLHYQDDWYILSSQIENKPDDYIFVYYRGRN-DAWDGYGGSVIYTRS 341 Db 1341YEDVIKRNEEDSIQLREKAKSLETLDEM 1368	п с
Qy 225 SGKWYITSGLNPTFDAFDCOLHEFHMENDKLYGNLTWRIKTLDGGFFTRSAVQTFVQD 282	B 0
Qy 171 CQIKCGDLFENSVVDQFNECAVSRKKCVPRKSDVGEFDVPDRNAVVQNFNM-KDF 224 : :	н о
Qy 111 IVLVCTFVIVPRVDAVDALKTCACLLKECRIELAKCIANPSCAANVACLOTCNNRPDETE 170	но
Qy 57 TSYKTSSFSDSSHCKDKSQICSIDTSFEEIQRFDLKRGMTLILEKQWRQFIQLA 110	ВО
Query Match 2.1%; Score 155.5; DB 1; Length 2869; Best Local Similarity 17.4%; Pred. No. 0.59; Matches 283; Conservative 242; Mismatches 573; Indels 529; Gaps 76;	
SITE 1030 1032 SITE 2599 2601 SEQUENCE 2869 AA; 330213	fo m
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EMBL; M880; HSSP; P369;	
s copyright. It is produced itute of Bioinformatics a thics Institute. There are stitutions as long as its ment is not removed. Usagense agreement (See http://ense@isb-sib.ch).	
CELL 69:1213-1226(1992). -!- FUNCTION: INVOLVED IN RETICULOCYTE ADHESION. SPECIFICALLY BINDS TO HUMAN RETICULOCYTE CELLS!- SUBGULIT: HOMODIMER (POTENTIAL)!- SUBGELLULAR LOCATION: MEMBRANE-BOUND.	
SEQUENCE FROM N.A. MEDLINE, 92315338. GALINSKI M.R., MEDIN "A reticulocyte-bind merozoites.";	
PLASMODIUM VIVAX EUKARYOTA; ALVEOI	
DT 01-APR-1993 (REL. 25, CREATED) DT 01-APR-1993 (REL. 25, LAST SEQUENCE UPDATE) DT 01-CT-1996 (REL. 34, LAST ANNOTATION UPDATE) DE RETICULCCYTE BINDING PROTEIN 1 PRECURSOR. GN RRP1	
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/ 1227 1 2292	1168 ITSGLNPTFDAFDCOLHEFHTEGDNKLVGNISWRIKTLDSGFFTRSAVQKFVQDPNQPGV	Db Qy
1 2256	1111 IKCGDLFENSVVDEFNECAVSRKKCVPRKSDLG-EFPAPDPSVLVQNFNISDFNGKWY	Оу
2207	1051 LACAFLIVPSADAVDALKTCACLLKGCRIELAKCIANPACAANVACLQTCNNRPDETECQ	dd Vo
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1971	790SKVENSPE-DYIFVYYKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDFN :	Оу
790 1926	761 FV0DFKYPGILYNHDNEYLLYQDDWYILS	Фр
760 1866	729 EFHTEENKLVGNLSWRI	D Qy
728 1806	670 NECAVSRKKCVPR-KSDVGDFPVPDPSVLVQKFDMKDFSGKWFITRGLNPTFDAFDCQLH	Db Qy
669 1755	613 TCTCLLKECRLELAKCISNPACAANVACLQTCNNRPDETECQ-IKCGDLFENSVVDEF	Db Qy
612 1699	553 NLSPAHSINQNVPKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADAVDALK	Оy
552 1643	493 VGSKLPGHKRFSWGWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGKH	ОУ
492 1599	456ATEVEKLFGRALPIRKLRMALAPHSNFLANHETIKYY ::: :::::	Qу
456 1545	416 EMTLFORLLEGFKELQODEENFVRELSKEEKEILNELQME	Оу
415 1486	373 CGPEPPLVERLEKTAEEGEKLLIKEAVEIEEEVEKEVEKVRDT	Qу

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             64 OR EERF2.
HERPESVIRUS SAIMIHI (STRAIN 11).
VIRUSES; DSDNA VIRUSES, NO RNA STAGE; HERPESVIRIDAE;
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01-APR-1993 (REL 25, LAST SEQUENCE UPDATE)
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ALBRECHT J.-C., NICHOLAS J., BILLER D., CAMERON K.R., BIESINGER B., NEWMAN C., WITTMANN S., CRAXTON M.A., COLEMAN H., FLECKENSTEIN B., HONESS R.W.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GAMMAHERPESVIRINAE.
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                                                                                                                                                                                                                                                                                                                                                                       EMBL; X64346; G60385; -.
EMBL; M86409; G330993; -.
PIR; H36812; H35812.
SEQUENCE 2469 AA; 28016
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J. VIROL. 66:5047-5058(1992).
                                                                                         178
                       324 -GRNDAWDGYGGSVIY---
                                                                                                                                                  271 FTRSAVQTFVQDPDLPGALYNHDNEFLHYQDDWYILSSQIENKPDDYIFVYYR-----
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1125 KFVEEVLESVKNLKEAKLKSLLPNGPVFTPPKFDWIHYYESNVNFHLKTINLPKVSTVAH 1184
                                             1262 RGRNDAWDGYGGAVVYTRSSVLPNSII------
                                                                                             1083 -----KIQSAFQDLNFSILI-----
                                                                                                                                                                                                                                                                                                     1097 LQTCNNRPDETE------CQIKCGDLFENSVVDEFNECAVSRKKCVPRKSDLGEFPAPD 1149
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           368
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                                                                                                                                                                                                                                                           ~~TAVDRPLKRELYNVIRKLQKQLKTLLEQQEFDNW~~~~~~~KMEVDSF~VPT 1027
                                                                                                                                SGFFTRSAVQKFVQDPNQPGVLYNHDNEYLHYQDDWYILSSKIENKPEDYIF-----VYY 1261
                                                                                                                                                                       PSRDVKTFIQNAPSMKAKQYAKKALKDQIQAMEIDVDPESVIEDNIKANGQKAWQ-----
                                                                                                                                                                                                                PSVLVQNF--NISDFNGKWYITSGLNPTFDAFDCQLHEFHTEGDN-KLVGNISWRIKTLD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            S-ADLRTTGGRSSRPLSAFRSGFSKG---IFDIVPLPSKNELKELTAPLLL------ 1046
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DAFDCQLHEFHTEENKLVGNLSWRIRTPDGGFFTRSAVQKF------
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DFP-----GKWFITRGLNPTF 720
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADAVDALKTCTCLLKECRLELAK 627
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NLITSLDNIPKN-NTFPRI----IDKTSNQPIKEGKALHSIDRILKNIVLEHGLITSSSIS 497
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -KICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGK-----HNLSPAHSINQNVPKG 567
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FGRALPIRKLRMALAPHSNFLANHETIKYYVGSKLPGHKRFSWGWEDYFGSIVVA-----
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ISKCKSLLQFVIL----WGE------KLSIPTR-DLKTILKTELIITEIABIALTK 542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ----IPIPEVLDTETTHS----DQETI-YMIGDE--NIHDWSYSDDDIDDTLDISFIQLD 441
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      HGPNIDLTSQEGLIIEISPPNTPKPTSTQKPPKTPRTPKPATPKAPKTPRKPKTPKESTI 288
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ---RENQKFESLKNTVQKLSTSEEFLKTLIDSTTLENVQLQIQ 878
                                                                                      ----PDDWLSL-AKEYTRPKSTLFTVIGPILL 1124
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                                           -----PELEKAAK 1296
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C -!- FUNCTION: MUSCLE CONTRACTION.

C -!- SUBUNIT: MUSCLE MYOSIN IS A HEXAMERIC PROTEIN THAT CONSISTS OF 2

HEAVY CHAIN SUBUNITS (MHC), 2 ALKALI LICHT CHAIN SUBUNITS (MLC)

C -!- SUBCELLULAR LOCATION: THICK FILAMENTS OF THE MYOFIBRILS.

C -!- SUBCELLULAR LOCATION: THICK FILAMENTS OF THE MYOFIBRILS.

C -!- DOMAIN: THE RODLIKE TAIL SEQUENCE IS HIGHLY REPETITIVE, SHOWING CYCLES OF A 28-RESIDUE REPEAT PATTERN COMPOSED OF 4 HEPTAPEPTIDES,

C -!- DOMAIN: THE RODLIKE TAIL SEQUENCE IS HIGHLY REPETITIVE, SHOWING CYCLES OF A 28-RESIDUES IN THE SI DOWAIN ARE SELECTIVELY ALKLATED AND ARE REQUIRED FOR MYOSIN ATPASE ACTIVITY.

C -!- EACH MYOSIN HEAVY CHAIN CAN BE SPLIT INTO 1 LIGHT MEROMYOSIN (LMM)

C AND 1 HEAVY MEROMYOSIN (HMM). IT CAN LATER BE SPLIT PURTHER INTO 2 GLOBULAR SUBFRAGMENTS (S1) AND 1 ROD-SHAPED SUBFRAGMENT (S2).

BETA ISOFORM IS A 'FAST' ATPASE MYOSIN, WHILE THE BYOLT PURTHER THE WYOSIN ATPASE MYOSIN, WHILE THE BYOLT PURTHER THE WYOSIN ATPASE MYOSIN, WHILE THE
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                                             MOD_RES
                                                                                                                                                                                                         DOMAIN
NP_BIND
                                                                                                                                                                                                                                                                                                                                                                                                                                    EMBL; U75316; G1698895; -. PFAM; PF00063; myosin_head; 1. PFAM; PF000612; IQ; 1.
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15-DEC-1998
15-DEC-1998
15-DEC-1998
                                                                                                                                                                                                                                                                                         MYOSIN; MUSCLE PROTEIN; COILED COIL; THICK FILAMENT; ACTIN-BINDING; ATP-BINDING; METHYLATION; ALKYLATION; MULTIGENE FAMILY.

DOMAIN 1 838 GLOBULAR HEAD (S1).

DOMAIN 839 · 1935 RODLIKE TAIL (S2 AND LMM DOMAINS).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email, to license@isb-sib.ch).
                                                                                                                                              DOMAIN
                                                                                                                                                                                 DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation -
                                                                                                                                                                                                                                                                               DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               the European Bioinformatics Institute.
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15-DEC-1998 (REL. 37, LAST EQUURNCE UPDATE)
15-DEC-1998 (REL. 37, LAST ANNOTATION UPDATE)
MYOSIN HEAVY CHAIN, CARDIAC MUSCLE BETA ISOFORM.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; MAMMALIA; EUTHERIA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1297 SIGRDFSTFIRIDNT-CGPEPALVERIE------KTVE-----EGERIIVKEV 1337
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SIMILARITY: BELONGS TO THE MYOSIN HEAVY CHAIN FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EDLRNDTKKHIVAPQIQSPNRFLSPEDIQEINSLPKLFRDSLLENESRLLASQKNEFQML 1304
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839 1935
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          ĀΑ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   STANDARD;
          223109
          MW;
ACTIN-BINDING.

METHYLATION (TRI-) (POTENTIAL).

ALKYLATION (SH-1) (POTENTIAL).

ALKYLATION (SH-2) (POTENTIAL).

MW: F072F29E CRC32;
                                                                                                                                                                                           IQ.
COILED COIL (POTENTIAL)
ATP (POTENTIAL).
                                                                                                                                                                      ACTIN-BINDING.
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p12883; 014904; C16579;
p1-0CT-1999 (REL. 12, CREATED)
01-UUN-1994 (REL. 29, LAST SEQUENCE UPDATE)
15-DEC-1998 (REL. 37, LAST ANNOTATION UPDATE)
MYOSIN HEAVY.CHAIN, CARDIAC MUSCLE BETA ISOFORM.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        "The complete sequence of the human beta-myosin heavy chain gene and a comparative analysis of its product.";
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JAENICKE T., DIECERICH K.W., HAAS PFORDT M., BACH A., VOSBERG H.P.;
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MYHT OR MYHCB.

HOMO SAPIENS (HUNAN).

CHORDATA; VERTEBRATA; MAMMALIA; EUTHERIA;
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LIEW C.-C., SOLE M.J., YAMAUCHI-TAKIHARA K., KELLAM B.,
ANDERSON D.H., LIN L., LIEW J.;
                                                                                                                                                                                                                                                                                                       SEQUENCE OF 1-115 FROM N.A. MEDLINE; 89264452.
                                                                                                                                                                                                                                                                                                                                                                                                                                          "Complete sequence and organization of the human cardiac beta-myosin heavy chain gene.";
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                                                                                                                                                                                                    YAMAUCHI-TAKIHARA K., SOLE M.J., LIEW J., ING D., LIEW "Characterization of human cardiac myosin heavy chain PROC. NATL. ACAD. SCI. U.S.A. 86:3504-3508(1989).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE FROM N. 4.
SEQUENCE OF 1310-1935 FROM N.A.
                                                              YAMAUCHI-TAKIHARA K., SOLE M.J., LIEW J., ING D., LIEW C.-C.;
PROC. NATL. ACAD SCI. U.S.A. 86:7416-7417(1989).
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                                                                                                                                      ERRATUM.
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genes.";
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MEDLINE: 94070863.
WATKINS H., THIERPELDER L., ANAN R., J
MCKENNA W., SEIDMAN J.G., SEIDMAN C.E.
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"Independent origin of identical beta cardiac mutations in hypertrophic cardiomyopathy.";
                                                                                                                                                                        VARIANTS HCM GLN-249; GLN-403; CYS-453 AND MET-606
                                                                                                                                                                                                    cardiac myosin heavy chain gene missense mutation.";
CELL 62:999-1006(1990).
                                                                                                                                                                                                                                                                                                    FANANAPAZIR L., DALAKAS M.C., CYRAN F., COHN G., EPSTEIN N.D.; "Missense mutations in the beta-myosin heavy-chain gene cause central core disease in hypertrophic cardiomyopathy."; PROC. NATL. ACAD. SCI. U.S.A. 90:3993-3997(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         "CANDRESKI M.A., LIEW C.-C.;
"Construction of a human ventricular cDNA library and characterization of a beta myosin heavy chain cDNA clone.";
                                                                                                                                                                                                                                                                                 VARIANT HCM GLN-403.
                                                                                                                                                                                                                                                                                                                                                                                                   hypertrophic cardiomyopathy.";
AM. J. MED. GENET. 58:267-276(1995).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MEDLINE;
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atrium.";
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SAEZ L., LEINWAND L.A.;
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Y., JOH-O K., KAWANA M.
                                     JARCHO J., MATSUMORI A.,
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human cardiac alpha- and
DNA clones. Regulation of
overload in human
            myosin
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MEDLINE; 96047159.

MOCLMAN J.C., BRINK P.A., CORFIELD V.A.;

"Identification of a novel Ala797Thr mutation myosin heavy chain gene in hypertrophic cardio HUM. MUTAT. 6:197-198(1995).
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ANAN R.,
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SPIRITO P., ROBERTS R., SEIDMAN J.G., SEIDMAN C.E.;
"Prognostic implications of novel beta cardiac myosin heavy
mutations that cause familial hypertrophic cardiomyopathy.",
J. CLIN. INVEST. 93:280-285(1994).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TOWBIN J., SEIDMAN C.E., ROBERTS R., "Isolation of a de novo mutant myocardial pedigree with hypertrophic cardiomyopathy.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AL-MAHDAWI S., CHAMBERLAIN S., CLEIAND J., NIHOYANNOPOULOS P., GILLIGAN D., FRENCH J., CHOUDHURY L., WILLIAMSON R., OAKLEY C., "Identification of a mutation in the beta cardiac myosin heavy chain gene in a family with hypertrophic cardiomyopathy."; BR. HEART J. 69:136-141(1993).
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"NOVEL missense mutation in cardiac beta myosin heavy chain gene found in a Japanese patient with hypertrophic cardiomyopathy.";
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            G., BACHINSKI L., FRIEDMAN D.L., CZERNUZEWICZ G., N J., SEIDMAN C.E., ROBERTS R.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              HCM ASN-615.
                                                                                                                                                                                                                                                                                                                                            GREVE G., THIERFELDER L., WATKINS H.,
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CORFIELD V.A.;
                             cardiomyopathy.";
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                                                     in exon
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Dy Qy	dd Ao	Дy	Qу	ОУ	ДУ	Дy	Db Qy	ф	Оу Об	Оy	Db Qy	ду	2 HO	RRA RRA RRA RRA RRA RRA RRI RRA RRA RRI RRA RRA
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IPELQTAAQKVGRDFNTF : :	ILSSKVENSPEDYIFVYYKGRNDAV 	QLHEFHTEENKLVGNLSWRIRTPDGGEF	CAVSRKKCVPRKSDVGDFPVPDP	LAKCISNPACAANVACLQTCNNRPDETECQ ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ;	KFPKDVALMVWEKWGOFAKTAIVAIFILSAFMGVKNW-PWMKLYFKIKPLLK	ICSSRRIPRYFRKSPRICCGLDS:	LPIRKLRMALAPHSNFLANHE	LFQRLLEGFKELQQDEENFVRELSKE : HPHFVRCI1PN	\-KSVGRDENNFITTDNSCGPEPPLVERLEKTAE 	ILSSQIENKPD-DYIFVYYRGRND : : :: PRNIKGKPEAHFSLIHYAGIVDYN		PDRNAVVQNFNMKDFS	1.9%; Score 146; Dirity 16.9%; Pred. No. 1.2 nservative 207; Mismatches	1.1. TANG TK., CHENG V., LIEN WP., LIEW CC Lial hypertrophic cardiom Lation in the beta-myosin unden death and end-stag 185-590(1996). R-349 AND TRP-719. RS., WEIST B., SCHRODER D SBEEGG HP.; enotype of hypertrophic c Type of two mutated beta-
IKTDNTCGPEPPLVE 86	YGGSVLYTRSA 8 : -: 1 LEGSLEQEKKVRMDLERAKRKLE 1	TRSAVQKFVQDPKYPGILYNHDN 77 : :: EIIAKLTKEKKALQEAHQQAL 10	SVLVQKFDMKDFSGKWFITRGL 71 : KVEKEK 96	IKCGDLFENSVVDEFNE 67 : : : ERCDQLIKNKIQLEAKVKEMNE 92	VASKADAVDALKTCTCLLKEC 62 : :: SAEREKEMASMKEEFTRLKEALE 86	RGLQLFSHGKHNLSPAHSINON 56	TIKYYVGSKLPGHKRESWG 50 : ::: GAEKLLSSLDIDHNQYKFG 75	KEILNELQMEAT- 45 : :::: : TKSPGVMDNPLVMHQLRCNGVL 69	EGEKLLIKEAVEIEEEVEK 40 : : : KGSSFQTVSALH-RENLNK 65	-AWDGYGGSVIYTRSPTLPESI 34 	FTRSAVQTFVQDPDLPGALYNHD 29	SGKWYITSGLNPTFDAFDCQLHEF 24 : : QEEYKKEGIEWTFIDFGMDLQAC 52	B 1; Length 1935; ; 529; Indels 434; Gaps	, LIN SY., LIOU YC. Thy in a family with a y chain gene: "ITINGER T., "Myopathy associated with a myopathy associated with a second control of the
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-!- ADDITIONAL REGIONS OF LOWER HOMOLOGY TO THE REPEAT CONSENSUS (ALWAYS STARTING WITH PROLINE) ARE FOUND IN BOTH FLANKING	
CYTOPLASMIC MICROTUBULI OR OTHER COMPONENTS OF THE NUCLEAR ENVELOPE	200
	66
MOL. GEN. GENET. 230:277-287(1991).	RL
"Nuclear migration in Saccharomyces cerevisiae is controlled by the highly repetitive 313 kDa NUM1 protein.";	RT.
PERECKO D., KUENTZEL H.;	RA
MEDLINE; 9207997.	RX
SEQUENCE FROM N. L. STRAIN-ATCC 28383 / FL100:	RP RC
SACCHAROMICEIRCEAE; SACCHAROMICES. [1]	RN
EUKARYOTA; FUNGI; ASCOMYCOTA; HEMIASCOMYCETES; SACCHAROMYCETALES;	868
NUM1 OR YDR150W. SACCHAROMYCES CEREVISTAE (BAKER'S YEAST)	OS GN
NUCLEAR MIGRATION PROTEIN NUM1.	DE
O1 DEC 1992 (REE. 24, CREADU) O1-DEC-1992 (REE. 24, CREADU) O1 DEC-1992 (REE. 24, CREADU)	מ מ
Q00402;	AC
UUT 6 1_YEAST NUM1 YEAST STANDARD: PRT: 2748 AA.	RESU NUM1 ID
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1382KEEME-FLUGIKMEASEVEKLFGKA 1405	0v
1552 EHEEGKILRAÇLEFNQIKAEIERKLAEKDEEMEQAKRNHLRVVDSLQTSLDAETRSRNEA 1611	Db
1345 EKEVEKVGRTEMTLFQ	Qy
1492 LEHLETFKRENKNLQEEISDLTEQLGSSGKTIHELEKVRKQLEAEKMELQSALEEAEASL 1551	ממ
1291 LEKAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGERIIVKEVEEIEEEV 1344	Qy
1449 FDKILAEWKQKYEESQSELESSQKEARSLSTELFKLKNAYEES 1491	Do
1231 HDNEYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPE 1290	Qy
1406 AVNAKCSSLEKTKHRLQNEIEDLMVDVERSNAAAAALDKKQRN 1448	Db
1171 GLNPTEDAFDCQLHEFHTEGDNKLVGNISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLYN 1230	Qy
1374KYETDAIORTEELEEAKKKLAQRLQEAEEAVE 1405	Db
1111 IKCGDLFENSTYDEFNECAVSRKKCVPRKSDLGEFPAPDPSVLVQNFNISDFNGKWYITS 1170	Qy
1327 NALAHALQSARHDCDLLREQYEEETEAKAELQRVLSKANSEVAQWRT 1374	Db
1051 LACAFLIVPSADAVDALKTCACLLKGCRIELAKCIANPACAANVACLQTCNNRPDETECQ 1110	Qy
1274TSQRAKIQTENGELSRQLDEKEALISQLTRGKLTYTQQLEDLKRQLEEEVKAK 1326	מם
994 LPPIQSADLRTTGGRSSRPLSAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKLVGV 1050	Qy
1232 TSNMEQIIKAKENLEKMCRTLEDQMNEHRSKAEETQRSVNDL 1274	מֹם
VATHCFTSPCHDRIRFFSSDDGIGRLGIT	ОУ
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SEQUENCE
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                                 1123 YLVEHAKATNHHLLSD--SAYEELVKCKENPDVEFLKEKSAKLGHTVVSNEAYSELEK-- 1179
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PIR; S19052; S19052.
SGD; L0001287; NUM1.
PROSITE; P850003; PH_DOMAIN; 1.
                                                                                                                                                             1003 TNHHLLSDSAYEDLVKCKENPDMEFLKEKSAKLGHTVVSNEAYSELEKKLEQPSLEYLVE 1062
                                                                                                  1063 HAKATNHHLLSDSAYEELVKCKENPDVEFLKEKSAKLGHTVVSNEAYSELEKKLEQPSLE 1122
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-!- SIMILARITY: CONTAINS 1 PH DOMAIN.
-!- CAUTION: IT IS UNCERTAIN WHETHER MET-1 IS THE INITIATOR.
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    464 GRALPIRKLRMALAPHSNFLANHETIKYYVGSKLPGHKRFSWGWEDYFGSIVVAK---- 519
                                                                409 -- VEKVRDTEMTLFQRLLEGFKELQQDEENFVRELSKEEKEILNE--LQMEA-TEVEKLF 463
                                                                                                                                                                                           325 RND---AWDGYGGSV------IYTRSPTLPESIIPN-----LQKAAKSVGRDF--- 364
                                                                                                                                                                                                                           949 YE-----DLVKCKENPDMEFLKEKSAKLGHTVVSNEAYSELEKKLEQPSLEYLVEHAKA 1002
                                                                                                                                                                                                                                                       276 VQTFVQDPDLPGALYNHDNEFLHYQ------DDWYILSSQIENKPDDYIFVYYRG 324
                                                                                                                                                                                                                                                                                                                                                           857
                                                                                                                                                                                                                                                                                                                                                                                                                                                   116 TEVIVPRVDAVDALKTCACLLKECRIELAKCIANPSC-----AANVACLQTCNNRPDET 169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   748 SAYEDLVKCKENPDV-----EFLKEKSAKLGHTVVSSEEYSELQRKYSELEKEVEQPS 800
                                                                                                                                                                                                                                                                                                                                                                                                                    801 LAYLVEHAKATDH----HLLSDSAYEELVKCKENPDMEFLKEKSAKLGHTVVSNEAYSEL 856
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             62 SSFSDSSHCKDKSQICSIDTSFEEIQREDLKRGMTLILEKQWRQF-----IQLAIVLVC 115
                                                                                                                                                                                                                                                                                         -----LKEKSAKLGHTVVSNEAYSELEKKLEQ-----PSLAYLVEHAKATDHHLLSDSA 948
                                                                                                                                                                                                                                                                                                                        VQNFNMKDFSGKWYITSGLNPTFDAFDCQLHEFHMENDKLVGNLTWRIKTLDGGFFTRSA 275
                                                                                                                                                                                                                                                                                                                                                                                    ECQI-----KCGD--LFENSVVDQFNECAVSRKKCVPRKSDVGEFPV?DRNAV 215
                                                                                                                                ----NNFITTDNS-----CGPEPPLVERLEKTAEEGEKLLIKEAV-EIEEEEVEKE--- 409
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01-OCT-1989 (REL. 12, LAST SEQUENCE UPDATE)
15-DEC-1998 (REL. 37, LAST ANNOTATION UPDATE)
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"Complete nucleotide sequence of full l
cardiac myosin heavy chain.";
NUCLEIC ACIDS RES. 17:7529-7530(1989).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 and under pathological conditions are regulated at the level
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MEDLINE; 851/9510.
MAHDAVI V., LOMPRE A.M., CHAMBERS A.P., NADAL-GINARD B.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MAHDAVI V., PERIASAMY M., NA Molecular characterization
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE OF 1524-1935 FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DISCUSSION OF SEQUENCE.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     "Cardiac myosin heavy chain isozymic transitions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE OF 1871-1935 FROM N.A.
                                                         the
                                                                                                                                                                                                                                                          SUBUNIT: MUSCLE MYOSIN IS A HEXAMERIC PROTEIN THAT CONSISTS OF 2
HEAVY CHAIN SUBUNITS (MHC), 2 ALKALI LIGHT CHAIN SUBUNITS (MLC)
AND 2 REGULATORY LIGHT CHAIN SUBUNITS (MLC-2).

SUBCELLULAR LOCATION: THICK FILAMENTS OF THE MYOFIBRILS.

DOMAIN: THE RODLIKE TAIL SEQUENCE IS HIGHLY REPETITIVE, SHOWING CYCLES OF A 28 RESIDUE REPEAT PATTERN COMPOSED OF 4 HEPTAPEPTIDES, CHARACTERISTIC FOR ALPHA-HELICAL COILED COILS.

CHARACTERISTIC FOR ALPHA-HELICAL COILED COILS.

PTM: TWO CYSTEINE RESIDUES IN THE SI DOMAIN ARE SELECTIVELY ALKYLATED AND ARE REQUIRED FOR MYOSIN AFPASE ACTIVITY.

ALKYLATED AND ARE REGUIRED FOR MYOSIN AFPASE ACTIVITY.

AND 1 HEAVY MEROMYOSIN (HMM). IT CAN LATER BE SPLIT FURTHER INTO 2 GLOBULAR SUBFRAGMENTS (S1) AND 1 ROD-SHAPED SUBERAGMENT (S2).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       the adult heart
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                                                                                                                                                               THE CARDIAC ALPHA ISOFORM IS A FAST ATPASE MYOSIN, WHILE THE BETA ISOFORM IS A SLOW ATPASE.
THERE ARE 10 OR MORE MYOSIN HEAVY CHAIN GENES IN THE RAT, TWO OF WHICH ARE SPECIFIC FOR ADULT CARDIAC MYOSIN HEAVY CHAINS.
SIMILARITY: THE PERIODICITIES OF HYDROPHOBIC AND CHARGED RESIDUES.
                                                   s SWISS-PROT entry is copyright. It is produced through a collaboration ween the Swiss Institute of Bioinformatics and the EMBL outstation - Buropean Bioinformatics Institute. There are no restrictions on its
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            HEART J. 5:181-191(1984). FUNCTION: MUSCLE CONTRACTION.
                                                                                                                                  CONSERVED.
                                                                                                                                                     WHICH DICTATE THE ALPHA-HELICAL COILED-COIL
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FHI; MURIDAE; MURINAE;
   is not removed. Usage tagreement '.
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PIR; A02989; A02989.
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                                           -----DALKTCTCLLKECRLELAKCISNPACAANVACLQTCNNRPDETECQIKCGDLFE
                                                                                         RRDSLLIIQWNIK------AFMGVKNWPWMKLYFKIKPLLKSAETEKEMANMKE
                                                                                                                                     PAHS---INQNVPKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADAV----
                                                                                                                                                                                   LDIDHNQYKFGHTKVFFKAGLLGLLEEMRDERLSRIITRI--QAQSRGVLSRMEFKKLLE
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ID MLP1_Y
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DT 01-0T0
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DE MYOSIN
GN MLP1 O
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                          Q02455;
Q1-OCT-1993 (REL. 27, CREATED)
Q1-UN-1994 (REL. 29, LAST SEQUENCE UPDAY
Q1-JUL-1998 (REL. 36, LAST ANNOTATION UPI
MYOSIN-LIKE PROTEIN MLP1.
MLP1 OR YKR095W OR YKR415.
SACCHAROMYCES CEREVISIAE (BAKER'S YEAST)
EUKARYOTA; FUNGI; ASCOMYCOTA; HEMIASCOMYCETES; SACCHAROMYCETALES;
                                                                                                                                                                                                                                                                                                       1598 QTSLDAETRSRNEALRVKKKMEGDLNEMEIQLSHANRMAAEA 1639
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                                                                                         (REL. 27, CREATED)
(REL. 29, LAST SEQUENCE UPDATE)
(REL. 36, LAST ANNOTATION UPDATE)
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- rocal Similarity
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EMBL; X73541; G450554; -.
EMBL; Z28320; G486587; -.
EMBL; S38173; S38173.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
447 EILNELOMEATEVEKLFGRALPIRKLR-MALAPHSNFLANHETIKYYVGSKLPGHKRFSW 505
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                                                                                               235 VILDIRNELNRERNDFQMERTNNDVLKQKN-----NELSKSLQ--EKLL--EIKGLS
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YEAST 9:1349-1354(1993).
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"A new yeast gene with a myosin-like heptad repeat structure.";
MOL. GEN. GENET. 237:359-369(1993).
                                                                                                                                                                                                                                                                                                                                                                                                171
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DAV----DALKTCTCLLKECR--LELAKCISNPACAANVACLQTCNNRPDETECQIKCG- 659
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGKHNLSPAHSINQNVP
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NKLSPEKDSLRIMVTQLQTLQKEREDLLEETRKSCQKKIDELEDALSELK-KET---SQK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    QSLQKIESETVNEAKEAIITLKS----EKMDLESRIEELQKELEELKTSVPNEDASYSNVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               KNQKLVECENDLQTLTKQRLDLCRQIQYLLITNSVSNDSKGPLRKEEIQ--FIQNIMQED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GRSSRPLSAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKLVGVLACAFLIVPSADAVDA 1066
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    THCFTSPCHDRIRFFS-----SDDGIGRLGITRKRINGTFLLKILPPIQSADLRTTG 1006
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FEGFKELQRDE-----ENFLRELSKEEMDVLDGLKMEATEVEKLFGRALPIRKLMAVA 954
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       IKQ-----RESTEN----MSLLNKEI
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                                                                                                                                                                                              WYILSSKIENKPE------DYIFVYYRGRNDAWDGYGG------AVVYYTRSSVLPNSIIP 1289
                                                                                                                                                                                                                                                                                                                    KSEY-----ESKLSKIQNDL------DQQTIYANTAQNNYEQELQKHADVSKTISELRE 1062
                                                                                                                                                                                                                                                                                                                                                         VDEFNECAVSRKKCVPRKSDLGEFPAPDPSVLVQNFNISDFNGKWYITSGLNPTFDAFDC
                                                                                                                                                                                                                                                                                                                                                                                                 LEDKISLLKEQMFNL-----NNELDLQKKGMEKEKADFKKRISILQNNNKEVEAV 1014
                                                                                                                                                                                                                                                                                                                                                                                                                                         LKTCACLLKGCRIELAKCIANPACAANVACLQTCNNRPDETECQIKCGDLFEN----SV 1121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 --TSQSLQQTNSKLDESFKDFT----NQTKNLT----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -----EDKIRLHTYNVMDETINDDSL-RKELEKSKINLTDAYSQIK--EYKDLYET- 933
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DHHIKQLEEDNNSNIEWYQNKIEALKKDYESVITSVDSKQTDIEKLQYKVKSLEKEIE--
                                                                                                                                                         --LSNSRIEDLSSQNKLLYDQIQIYTAADKEVNNSTNGPGLNNILITLRRERDILDTKVT
                                                                                                                                                                                                                                      QLHTY---
                                                                                                                                                                                                                                                                            QLHEFHTEGDNKLVGNISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLYNHDNEYLHYQDD
EKL-NQLNLLRESNITL-----RNEL-ENNNNKKKELQSE----LDKLKQNVAPIE 1255
                                   EEVEKEVEKVGRTEMTLFQRLAEGFNELKQDEENFVRELSKEEMEFLDEIKMEASEVE 1399
                                                                         VAERDAKMLRQKISLMDVELQDARTKLDNS
                                                                                                                 ELEKAAKSIGRDFSTF-----IRTDNTCGPEPALVERIEKTVEEGERIIVKEVEEIE 1341
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -LYDSKSDISIKLGKEKSSRILAEERFKLLSNTLDLTKAENDQLRKRFDYLQN 719
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -RNDAWDGYGG-----SVLYTRSAVLPESIIPELQTAAQKVGRDFNTFIKTD-
                                                                                                                                                                                                                                      -----KGQVKTLN---LSRDQLENALKENEKS---WSSQKESLLEQLD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    --PPLVERLEKKVEEGERTIIKEVEEIEEEVEKVRDKEVTLFSKL
                                                                             -RVEK - - - ENHSSIIQQHDDIM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   -----DEKTS 964
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RESULT CHICK

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В
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                                                                                                   Matches
                                                                                                                                                                                                                                                                                                  PFAM; PF00569: 7. CTINI, 27

PROSITE; PS01159; WW_DOMAIN_1; 1.

PROSITE; PS50020; WW_DOMAIN_2; 1.

PFAM; PF00307; actinin-binding; 1.

PFAM; PF00397; WW_rsp5_WWP; 1.

PFAM; PF00569: 7. CTIN; 27

PFAM; PF00569: 7. CTIN; 27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    01-OCT-1989
01-OCT-1989
01-NOV-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DMD_CHICK P11533;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GALLUS GALLUS (CHICKEN).
EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ARCHOSAURIA; AVES;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DYSTROPHIN.
                                                                                                                                                                                                                                                                                                                                                                                                                  PIR;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              use by non-profit institutions as long as its content modified and this statement is not removed. Usage by an
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LEMAIRE C., HEILIG R., MANDEL J.L.;
"The chicken dystrophin cDNA: striking conservation of the C-terminal coding and 3' untranslated regions between man and chicken.";
EMBO J. 7:4157-4162(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NEOGNATHAE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                      entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NUCLEIC ACIDS RES. 16:11815-11815(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                              EMBL;
1983 TTFVMTESMTVETTYVPSTYLAEI-LQLLQALSEVEERLNSPVLQAKD------
                                                                                                                                                                                          VARIANT
                                                                                                                                                                                                                   DOMAIN
                                                                                                                                                                                                                                                                        REPEAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         -!- FUNCTION: MAY PLAY A ROLE IN ANCHORING THE CYTOSKELETON TO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE FROM N.A.
                                                                                                                                                                 SEQUENCE
                                                                                                                                                                                                         VARIANT
                                                                                                                                                                                                                                  DOMAIN
                                                                                                                                                                                                                                             DOMAIN
                                                                                                                                                                                                                                                         DOMAIN
                         116
                                                                           71 KDKSQICSID":SFEEIQRFDLKRGM--TLI-LEKQWRQF-----IQLAIVLVC 115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SIMILARITY: THE ACTIN-BINDING DOMAIN IS OF A TYPE FOUND IN MANY ACTIN-BINDING PROTEINS (SUCH AS ACTININ, DYSTROPHIN, FIMBRIN, ABP-120, ABP-180, OR BETA-FODRIN).
SIMILARITY: CONTAINS 1 WW DOMAIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PLASMA MEMBRANE
                                                                                                                                                                                                                                                                                                                                                                                                                  S02041; S02041
                         TFVIVPRVDAVDALKTCACLLKECRIELAKCIANPSCAANVACLQTCNNRPDETECQIKC 175
                                                   KKKEDLNAVNPQAERLSKDGAAKAVEPTLVQLSKRWRDFESKFAQFRRLNYAQIQTVLED 1982
                                                                                                                                                                                                                                                                                                                                                                                                                               X13369;
                                                                                                     245;
                                                                                                                 Similarity
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                                                                                                                                                                                            1869
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                                                                                                     Conservative
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                                                                                                                                                                   ÀΑ;
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12, LAST SEQUENCE UPDATE)
32, LAST ANNOTATION UPDATE)
                                                                                                                                                                                                       244
3000
3085
3357
1171
                                                                                                                                                                               1885
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                                                                                                                 1.8%;
                                                                                                                                                                                                                                                                                   ACTIN-BINDING; CALCIUM-BINDING; CYTOSKELETON
                                                                                                                                                                   422874
                                                                                                     196;
                                                                                                                                                                   MW; AF61A205
                                                                                                               Score 135; I
Pred. No. 12;
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К -> R.
                                                                                                                                                                                                         CYS-RICH.
MISSING.
                                                                                                                                                                                                                                 ACTIN-BINDING.
26 SPECTRIN-LIKE REPEATS
WW DOMAIN.
                                                                                                      Mismatches 482;
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                                                                                                                             DB 1;
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                                                                                                                             Length 3660;
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    2030
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1063	1017 RSGFSKGIFDIVPLPSKNELKELTAPLLLKLVGVLACAFLIVPSADA:	Db Qy
1016	2807 LHLSLQELLAWLQLKEDELKQQAPIGGDIPTVQKQNDVHRTFKRELKTKEPVIMNALETV	B 4
977 2806	23 EMDVLUGLKMEATEVEKLEGRÄLPIRKLMAVATHCETSPCHDRIREFSSDDGIGR	DB 45
2766	07 TTANVLQDATHKEKTLEDPQMVRELMKQWQDLQAEIDAHTDIFHNLDENGQKILRSLEGS	망
922	EENFLRELSKE	Qy
881 2706	84/TEIKUUNTCGPEPPLVERLEKKVEEGERTIIKEVE	Db dd
2650	95 QAKAKLESWKEISYTVEALKKQNSELKQESKEIRQWQMNIEGVNDVALKPVRDYSA	Db
847	YGGSVLYTRSAVLPESIIPELQTAAQKVGRDFN-	QУ
2594		Db
802	LLYQDDWYILSSKVENSPEDYIFV	Qy
744 2537	2496 TVGDLDDINDMIIKQKANMQDLEQRRPQLDELITAAQNIKNK	당 성
2495	3/ EMESSY	5 5
œ	633 ACAANVACLQTCNNRPDETECQIKCGDLFENSVVDEFNECAVSRKKCVPRKS	, S
2456	08 AINHLILOLKEK PTFGEPALTSPGVLT-SGQTVAVDTQARVTKETTSFTP	Db
632	LKTCTCLLKECRLELAKCISNP	Qy
2407	ATHPVKKKLEDI	DЪ
572	SSRRIPRYFRKSPRICCGLDSRGLQLFSHGKHNLSPAHSINQNVPKGNSGC	δÃ
2378		Db
512	ALPIRKLRMALAPHSNFLANHETIKYYVGSKLPGHKRFSWGWEDYFG	Qγ
2344	2312	Db ,
100	EVEKEVEKVRDTEMT.FORT.TEGEKETOODEENEUGET GEGEGET TEGETOOTEENEUGEVEKEVEKVEVERDE TEGETOOTEENEUGEVEKENDE TEGETOOTE	٧ <u>٥</u>
400	341 SPTLPESIIPNLOKAAKSVGRDENNFITTDNSCGPEPPLVERLEKTAEEGEKLLIKEAVE	Db Qy
2260	2201 QLVEKRKRIEEEKNILSEFQEDLNKLILWLEETENVIAIPLEPGNEDQLRDCLGKVKLRV	Db
340	288ALYNHDNEI	Qy
2200	2144 TKQFLQELQDGIGRQQTVVKTLNVTGEEIIEQSSAADANVLKEQLGNLNTRWQEI	Dα
288	261 WRIKTLDGGFFTRSAVQTFVQDPDLPG	Qy
2143	2084 NSOWEKVNKMYRDROARFDKSKEKWRLFHCEMKSFNEWLTETEEKLSRAQIEAGD	Db
N)	225 SGKWYITSGLNPTFDAFDCQLHEFHMENDKL	Qy
2083	2031 EDLLKQEECLKNIKDCLGRLQGHIDIIHSK	Db
	176 GDLFENSVVDOFNECAVSRKKCVDRKGNVGFEDVD	ν0

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MYSP_
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MEDLINE; 95324556.
JULLIAN E.H., KELL
STEDMAN H.H., RUBI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TISSUE-SKELETAL MUSCLE;
MEDLINE; 90323631.
KARSCH-MIZRACHI I., FEGHALI R., SHOWS T.B. JR., LEINWAND L.A.;
"Generation of a full-length human perinatal myosin heavy-chain-encoding cDNA.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        -WYSP_HUMAN STANDARD; PRT; 1937 AA.

P13535; Q14910; P13535; Q14910; P13535; Q14910; P13535; Q14910; P13535; Q14910; P13535; Q14910; P1355; P1
                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE OF 860-1937 FROM N.A. MEDLINE; 89234168.
                                                                                                                                                                                                                                                                                                                                                                                                                                         myosin heavy chains.";
EUR. J. BIOCHEM. 189:55-65(1990).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TISSUE=SKELETAL MUSCLE;
MEDLINE; 90235862.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "Identification of three developmentally controlled mvosin heavy chains.":
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ARNOLD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE OF 502-1937 FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 "Characterization of a human perinatal myosin heavy-chain transcript.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GENE 89:289-294(1990).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           HOMO SAPIENS (HUMAN).

EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; MAMMALIA; EUTHERIA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 HUMAN
                                                                                                                                                                                                                                                                                                                                                 FEGHALI R., LEINWAND L.A.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EUR. J. BIOCHEM. 230:1001-1006(1995).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TISSUE=SKELETAL MUSCLE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EUKARYOTA; METAZOA; CH
PRIMATES; CATARRHINI;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   [1]
SEQUENCE FROM N.A.
-GVELETAL MUSCLE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         3062 ISPNKVPYYINHETQ 3076
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VGDLLIDSLQDHLEKVKVYRAEMVPLKEKVHQVNELAHRFAP-PDIQLSPYTLSCLEDLN
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      H.H.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BUCHBERGER-SEIDL A., BRAUN T., SINGH S., GOEDDE H.W.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RUBINSTEIN N.A.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          KELLY A.M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      HOMINIDAE; HOMO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  POMPIDOU A.J., HOFFMAN R., SCHIAFFINO S.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                --SQHFLTTSVQGPWERA 3061
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Matches 280;
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EMBL; Z38133; G558669; -.
EMBL; Z51592; G29466; -.
EMBL; Y00821; G34864; -.
EMBL; M35250; G531200; -.
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PFAM; PF00612; IQ;
HSSP; P13538; 2MYS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MYOSIN; MUSCLE PROTEIN; COILED COIL; THICK FILAMENT; ACTIN-BINDING; ATP-BINDING; METHYLATION; ALKYLATION; HEPTAD REPEAT PATTERN;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PIR; A30220; A30220.
MIM; 160741; -.
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454 QPRQYFIGVLDIAGFEIFDFNSLEQLCINFTNEKLQQFFNHHMFVLEQEEYKKEGIEWTF 513
                                                                                                                                                                                                                                                                                                                 99
                                                                                                                                                                                                                                                                                                                                                                                                    43 IRSNN----GYFNSFRLFTSYKTSSFSDSSHCKDKSQICSIDTSFEEIQRFDLKRGMTLI 98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AND 1 HEAVY MEROMYOSIN (HMM). IT CAN LATER BE SPLIT FURTHER INTO 2 GLOBULAR SUBFRAGMENTS (S1) AND 1 ROD-SHAPED SUBFRAGMENT (S2).
SIMILARITY: THE PERIODICITIES OF HYDROPHOBIC AND CHARGED RESIDUES, WHICH DICTATE THE ALPHA-HELICAL COILED-COIL STRUCTURE, ARE CONSERVED.
                                                                                                                                                                             LGFTPEEKVSIYKLTGAVMHYGNMKFKQKQREEQAEPDGTEVADKA-----AYLQSLNS 395
                                                                                                                                                                                                                                                                AERSYHIFYQITSNKKPDLIEMLLITTNPYDYAFVSQGEITVPSIDDQEELMATDSAIDI 341
                                                                                                                                                                                                                                                                                                              LEKQWRQFIQLA-----IVLVCT------FVIVPRVD-----AVDALKTC 132
                                                                                                                                                                                                                                                                                                                                                        VRNDNSSRFGKFIRIHFGTTGKLASADIETYLLEKSRV-----TFQLK----- 282
                                                                                       ADLLKALCYPRVK-VGNEYVTKGQTVQQVYNAVGALAKAVYEKMFLWMVTR-INQQLDTK 453
                                                                                                                                   CAVSRKKCVPRKSDVGEFPVPDRNAVVQNFNMKDFSGK-----WYITSGLNPT----
                                                                                                                                                                                                                       ACLLKECRIELAKCIANPSCAANVACLQTCNN----RPDETECQIKCGDLFENSVVDQFNE 189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PF00063; myosin_head; 1. PF00612; IQ; 1.
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                                           -----FDAFDCQLHE---FHMENDKLVGNLTWRIKTLDGGFFTRSAVQ-TF 279
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970
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ilarity 17.0%;
Conservative 24
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ACTIN-BINDING.
ACTIN-BINDING.
ACTIN-BINDING.
ACTIN-BINDING.
ALGORIAN (SH-1) (POTENTIAL).
ALKYLATION (SH-2) (POTENTIAL).
ALKYLATION (SH-2) (POTENTIAL).
A -> R (IN REF. 1).
A -> R (IN REF. 3).
M -> N (IN REF. 3).
M -> N (IN REF. 3).
M -> H (IN REF. 1) AND 4).
M -> OGG (IN REF. 1).
M -> OGIN REF. 1 AND 4).
MC -> DGG (IN REF. 1).
M
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Pred. No. 5.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GLOBULAR HEAD (S1).
RODLIKE TAIL (S2 AND LMM DOMAINS).
                                                                                                                                                                                                                                                                                                                                                                                                                                                red. No. 5.5;
Mismatches 597;
                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels 529; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 1937;
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141	7	1377	Db
116	DETECQIKCGDLFENSVVDEFNECAVSRKKCVPRKSDLGEFPAPDPSVLVQNF	1105	Qy
137	EETKAKNALAHALQSSRHDCDLLREQYEEEQEGKAELQRA	1324	Db :
116	ORLINDE-TAORAREQTEAGERSROLDERDALVSQLSRS	1045	Q
104	TELLKILPPIQSADLRTTGGRSSRPLSAFRSGFSKGIFDIVPLPSKNELKE	988	, V
126	DDLSSNAEAISKAKGNLEKMCRSLEDQVSELKTKEEEQ	1232	Db
987	DGLKMEATEVEKI.FGRALPIRKLMAVATHCETSPCHDRIRFESSDDGIGRLGITRKRING	928	Qy
123	EFQKLRRDLEEATLQHEAMVAALRKKHADSMAELG	1173	Db
927		890	Оy
117	ELQARIEELGEEIEAERASRAKAEKQRSDLSRELEEISERLEEAGGATSAQVELNKKREA	1113	Db
990	- p	871	Qy
111	KRKLEGDLK LAQESTMDMENDK	1055	Db
871	AQKVGRDFNTFIKTDNTCGPEPPLVERL	838	Qy
105	DLQAEEDKVNILTKAKTKLEQQVDDLEGSLEQEKKLRMDLERA	1012	Db
837	3 YLLYQDDWYILSSKVENSPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTA	778	Qy
101	?HATENK-VKNLTEEMAGLDETIAKLSKEKKALQETHQQTLD	972	Db
777	PTFDAFDCQLHEFHTEENKLVGNLSWRIRTPDGGFFTRSAVQKF	718	Qy
972	EINAELTAKKRKLEDE	934	Db
717	NSVVD	663	Qy
934	EADSLADAEERCEQLIKN-KI	897	Db
662	KADAV-DALKTCTCLLKECRLELAKCISNPACAANVACLQTCNNRPDETECQIKCGDLFE	604	Qγ
968	PLIKSAETEKEMATMKEEFQKTKDELAKSEAKRKELEEKMVTLIKEKNDLQLQVQS	841	ДЬ
603	KGNSGCKFPKDVALMVWEKWGQ	566	Qy
840	KLAQIITRTOAVORGELMRVEYQKMLQRREALFCIQYNVRAFMNVKHWPWMKLFFKIK	783	Db
565	RIPRYFRKSDRICCGLDSRGLQLFSHGKHNLSPAHSINQNVP	524	Qy
782	QRYKVLNASAIPEGQFIDSKKASEKLLASIDIDHTQYKFGHTKVFFKAGLLGLLEEMRDE	723	DЬ
523	KLRMALAPHSNFLANHETIKYYVGSKLPGHKRFSWGWEDYFGSIVVAKICSSR	471	Qy
722	INLRSTHEHFVECIIPNETKTPGAMEHELVLHQLRCNGVLEGIRICRKGFPSRILYGDFK	663	Db
471	KELQQDEENFYRELSKEEKEILN	428	Qy
662	SAEADSSAKKGAKKKGSSEQTVSALFRENLNKLM	629	Db
427	TTDNSCGPEPPLVERLEKTAE	368	Qy
628	VVKGKAEAHESLIHYAGTVDYNITGWLDKNKDPLNDTVVGLYQKSAMKTLASLFSTYA	571	Db
367	FVYYRGRND	319	ν _Q
571	IDFGMDLAACIELIEKPLGIFSILEEECMFPKATDTSFKNKLYDQHLGKSANFQKPK	514	DЬ
318	VQ-DPDLPGALYNHDNEFLHYQDDWYILSSQIENKPDDYI	280	Qy

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01-FEB-1996 (REL. 33, LAST SEQUENCE UPDATE)
01-OCT-1996 (REL. 34, LAST ANNOTATION UPDATE)
MEROZOITE SURFACE PROTEÍN 1 PRECURSOR (MEROZOITE SURFACE ANTIGENS)
     CARBOHYD
                          CARBOHYD
                                         CARBOHYD
                                                                                                                                                     SIGNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        REVISIONS, SEQUENCE FROM N.A.

PAN W., TOLLE R., BUJARD H.;

SUBMITTED (JUN-1995) TO EMBL/GENBANK/DDBJ DATA BANKS.

-!- SUBCELLULAR LOCATION: ATTACHED TO THE MEMBRANE BY A GPI-ANCHOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Plasmodium falciparum merozoites: studies at the genetic level.";
EMBO J. 4:3823-3829(1985).
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                                                                                            TRANSMEM
                                                                                                                 DOMAIN
                                                                                                                                  CHAIN
                                                                                                                                                                    TRANSMEMBRANE;
                                                                                                                                                                                         MALARIA;
                                                                                                                                                                                                        PFAM;
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                                                                                                                                                                         A25120; SAZQK1.

1; PF00008; EGF; 1.

1RIA; MEROZOITE; POLYPROTEIN; REPEAT; SIGNAL; GLYCOPROTEIN;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (POTENTIAL)
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   POTENTIAL.
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                                                        POTENTIAL.
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                                                                                          TRIPEPTIDE SG(TI
                                                                                                                              MEROZOITE SURFACE PROTEIN 1
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01-FEB-1996 (REL. 33, LAST SQUENCE UPDATE)
01-FEB-1996 (REL. 33, LAST ANNOTATION UPDATE)
MEROZOITE SURFACE PROTEIN 1 PRECURSOR (MEROZOITE SURFACE ANTIGENS)
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This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
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                                                                                                                                                                                                                                                                                                                                                                                                                                 HOLDER A.A., LOCKYER M.J., ODINK K.G., NICHOLLS S.C., HILLMAN Y., DAVEY L.S.,
                                                                                                                                                                                                                                                 SUBMITTED (MAR-1991) TO EMBL/GENBANK/DDBJ DATA BANKS -!- SUBCELLULAR LOCATION: ATTACHED TO THE MEMBRANE B
                                                                                                                                                                                                                                                                                                                                                                           antigens
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                                                                                                                                                                                                                                                                                            HOLDER A.A.;
                                                                                                                                                                                                                                                                                                                 REVISIONS
                                                                                                                                                                                                                                                                                                                                                      NATURE 317:270-273(1985).
                                                                                                                                                                                                                                                                                                                                                                       "Primary structure of the precursor to the three major surface antigens of Plasmodium falciparum merozoites.";
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  746 RTPDGGFFTRSAVQKFVQDPKYPGILYNHD--NEYLLYQDDWYILSSKVEN-----SPED
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                                                                                                       ECQI-----KCGDLFENSVVDEFNECAVSRKKCVPRKSDVGDFPVPDPSVLVQ--
                                                                                                                                                                                   KITKDENKPDEKILEV----SDIVKVQVQKVLLM-----NKIDELKKTQLILKNVELKH
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                                                                                                                                                                                                                                                               VVAKICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGKHNLSPAHSINQNVPKGNSGC---
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                                                                                                                                NIHVPNSYKQENKQEPYYLIVLKKEIDKLKVFMPKVESLINEEKKNIKTEGQSDNSEPST
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                            TPPAPVNNKTENVSKLDYLE----
                                                                             EGEITGQATTKFGQQAGSALEG---DSVQAQAQEQKQAQP----PVPVPVPVPEAKAQVP
                                                                                                                                                                                                             -----KFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADAVDALKTCTCLLKECRLE-
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                              ----KLYEFL-----NTSYIC
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"Characterization and nucleotide sequence of heavy chain gene from Syrian hamster."; J. MOL. CELL. CARDIOL. 26:1155-1165(1994).
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01-JAN-1990 (REL. 13, CREATED)
15-JUL-1998 (REL. 36, LAST SEQUENCE UPDATE)
15-DEC-1998 (REL. 37, LAST ANNOTATION UPDATE)
MYOSIN HEAVY CHAIN, CARDIAC MUSCLE BETA ISOFORM.
     JANDRESKI M.A., SOLE M.J., LIEW C.-C.; "Sequence of cDNA encoding the Syrian hamster cardiac beta-myosin
                                                                 SEQUENCE OF 962-1935 FROM N.A. MEDLINE; 88247788.
                                                                                                                                                                                                                         WANG R., SOLE M.J., CUKERMAN E., LIEW C.-C
                                                                                                                                                                                                                                                                                  SEQUENCE FROM N.A.
STRAIN-F1B; TISSUE-LIVER;
                                                                                                                                                                                                                                                                                                                                                                                      MESOCRICETUS AURATUS (GOLDEN HAMSTER).
EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; MAMMALIA; EUTHERIA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1292 VYRSLKKQLE---NNVMTFNVNVKDILNSRFNKRENFKNVLESDLIPYKD 1338
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                                        SOLE M.J.,
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-I- SUBUNIT: MUSCLE MYOSIN IS A HEXAMERIC PROTEIN THAT CONSISTS OF 2
HEAVY CHAIN SUBUNITS (MHC), 2 ALKALI LICHT CHAIN SUBUNITS (MLC)
AND 2 REGULATORY LIGHT CHAIN SUBUNITS (MLC-2)
-I- SUBCELLULAR LOCATION: THICK FILAMENTS OF THE MYOFIBRILS.
-I- DOMAIN: THE RODLIKE TAIL SEQUENCE IS HIGHLY REPETITIVE, SHOWING
CYCLES OF A 28-RESIDUE REPEAT PATTERN COMPOSED OF 4 HEPTAPEPTIDES,
CHARACTERISTIC FOR ALPHA-HELICAL COILED COILS.
-I- EACH MYOSIN HEAVY CHAIN CAN BE SPLIT INTO 1 LIGHT MEROMYOSIN (LMM)
AND 1 HEAVY MEROMYOSIN (HMM). IT CAN LATER BE SPLIT FURTHER INTO
2 GLOBULAR SUBFRAGMENTS (S1) AND 1 ROD-SHAPED SUBFRAGMENT (S2).
-I- SIMILARITY: BELONGS TO THE MYOSIN HEAVY CHAIN FAMILY.
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304 YILSSQIENKPDDYIFVYYRGRND----AWDGYGGSVIYTRSPTLPESIIPNLQKAA-KS
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation
                                                                                                                     238
                                                                                                                                                                  188 NECAVSRKKCVPRKSDVGEFPVPDRN-----AVVQNFNMKDFSGKWYITSGLNPT- 238
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NUCLEIC ACIDS RES. 16:4737-4737(1988).
                                                                                                                                        NSADLLKGMCHPRVKVGNEYVTKGQNVQQVSYAIGALAKSVYEKMFN--WMVTR-INATL 446
                            WTFIDFGMDLQACIDLIEKPMRIMSILEEECMFPKATDMTFKAKLYDNHLGKSNNFQKPR 566
                                                                                                                                                                                                      251;
                                                                                 ETKQPRQYF1GYLD1AGFE1FDFNSFEQLC1NFTNEKLQQFFNHHMFVLEQEEYKKEG1E
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                                                                                                             --,----FDAFDCQLHE---FHMENDKLVGNLTWRIKTLDGGFFTRSAVQ 277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PROTEIN; COILED COIL; THICK FILAMENT; ACTIN-BINDING; ETHYLATION; ALKYLATION; MULTIGENE FAMILY.

1 838 GLOBULAR HEAD (S1).
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                                                                                                                                                                                                1.8%; Score 133.5; I
17.0%; Pred. No. 6.3;
tive 211; Mismatches
                                                                                                                                                                                                                                                                       222928 MW;
                                                                                                                                                                                                                                                                                   ALKYLATION (SH-1) (POTEN

ALKYLATION (SH-2) (POTEN

D -> E (IN REF 2).

T -> TE (IN REF 2).

E -> Q (IN REF 2).

L -> Y (IN REF 2).

DLOADED -> ALEARKY (IN RIF 2).

L -> Y (IN REF 2).

D -> N (IN REF 2).

D -> N (IN REF 2).

D -> N (IN REF 2).

C -> Q (IN REF 2).

D -> N (IN REF 2).

C -> R (IN REF 2).

T -> A (IN REF 2).

T -> A (IN REF 2).

C -> R (IN REF 2).

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L -> Y (IN REF 2).

M -> L (IN REF 2).
                                                        METHYLATION (TRI-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     COILED COIL (POTENTIAL).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            HDNEYLLYQDDWY--ILSSKVE----'-NSPEDYIFVYYKGRND---AWDGYGGSVLYTRS
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                                                                                                                                                                                                                                                                                                      TSQRAKLQTENGELSRQLDEKEALISQLTRG-----KLTYTQQLEDLKRQL-----
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EEEL-EAERTARAKVEKLRSDLSRELEEISERLEEAGGATSVQIEMNKKREAEFQKMRRD 1176
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EKKVEEGERT------IIKEVEEIEEEVEK-------
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                                                                                                                                       LQCVLSKANSEVAQWRTKYETDAIQRTEELEEAKKKLAQRLQDAEE--------
                                                                                               ISDFNGKWYITSGLNPTFDAFDCQLHEFHTEGDNKLVGNISWRIKTLDSGFFTRSAVQKF
                                                           -AVEAVNAKCSSLEKTKHRLQNEIEDLMVD-
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                                                                                                                                                                               -GDLFENSVVDEFNECAVSRKKCVPRKSDLGEFPAPDPSVLVQNFN 1158
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                                                               -VERSNAAAA 1439
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                                                                                                                                                                                                                                                                                                           A KOCHI S.K., SCHIAVO G., MOCK M., MONTECUCCO C.;

A KOCHI S.K., SCHIAVO G., MOCK M., MONTECUCCO C.;

T ZINC content of the Bacillus anthracis lethal factor.";

I FEMS MICROBIOL. LETT. 124:343-348(1994).

C -!- FUNCTION: ONE OF THE THREE PROTEINS COMPOSING THE ANTHRAX TOXIN,

C AGENT WHICH INFECTS MANY MAMMALIAN SPECIES AND THAT MAY CAUSE

C DEATH. LF IS THOUGHT TO BE A LETHAL FACTOR THAT, WHEN ASSOCIATED

C WITH PA, CAUSES DEATH. LF IS NOT TOXIC BY ITSELF. PA IS THOUGHT TO

C BIND TO RECEPTORS OF SENSITIVE EUKARYOTIC CELLS, THEREBY

FACILITATING THE INTERNALIZATION OF LF OR EF.

C -!- SUBUNIT: SECRETED ANTHRAX TOXIN IS COMPOSED OF THREE DISTINCT

C PROTEINS, A PROTECTIVE ANTICEN (PA), A LETHAL FACTOR (LF) AND AN

EDEMA FACTOR (EF). NONE OF THESE IS TOXIC BY ITSELF.

C -!- SUBCELLULAR LOCATION: SECRETED.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LEF_BACAN P15917;
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BRAGG T.S., ROBERTSON D.L.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PLASMID PXO
                                                                                                                                 This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial modified and this statement is not removed. Usage by and for commercial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GENE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE FROM N.A., AND SEQUENCE
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BACILLUS ANTHRACIS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SUBMITTED (APR-1990)
                                                                                                  entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MEDLINE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Nucleotide sequence and analysis of the lethal factor gene (lef) from Bacillus anthracis \mbox{\ensuremath{^{"}}};
                                                                                                                                                                                                                                                                                                -!- SIMILARITY: THE PA-BINDING REGION IS FOUND IN BOTH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ZINC-BINDING
                                                                                                                                                                                                                                              METALLOPECTEASE).
                                                                                                                                                                                                                                                               SIMILARITY: RELONGS TO PEPTIDASE FAMILY M34 (ZINC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SLDAETRSRNEALRVKKKMEGDLNEMEIQLSHANRMAAEA 1638
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 BACILLUS/CLOSTRIDIUM GROUP;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ---KAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGERI 1332
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EMBL/GENBANK/DDBJ DATA
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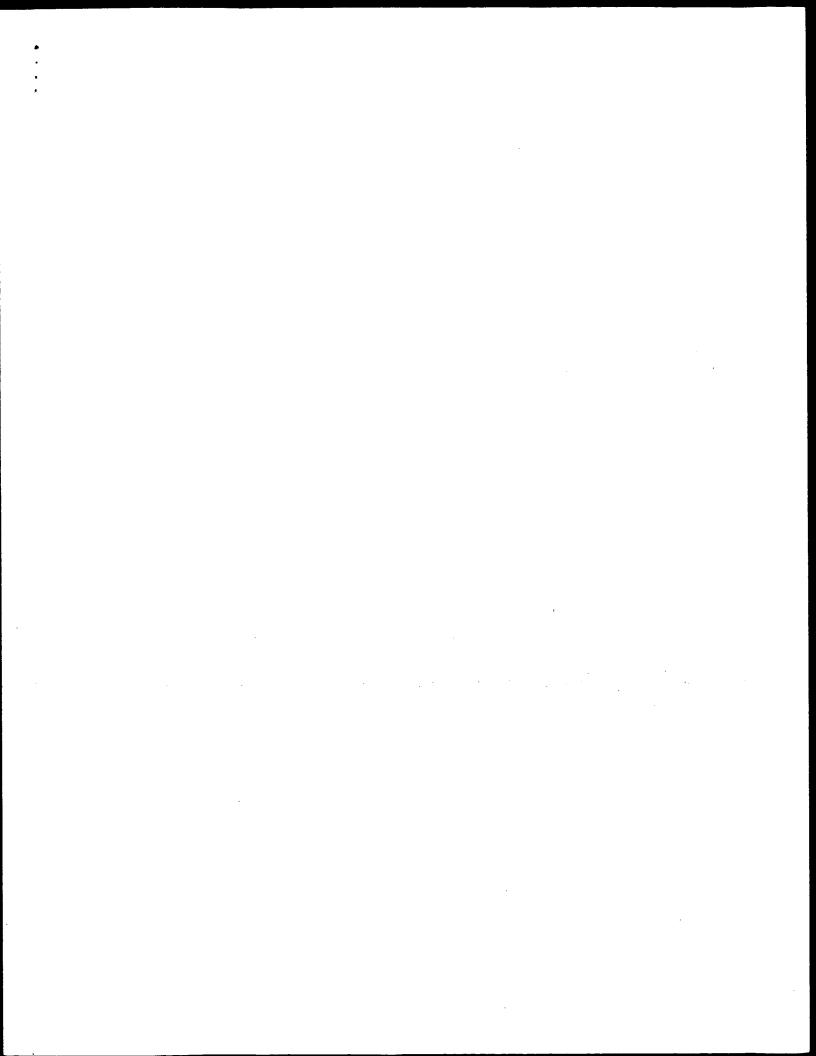
PIR: JQ0032; JQ0/32.
PROSITE; PS00142; ZINC_PROTEASE; 1.
HYDROLASE; METALLOPROTEASE; ZINC; TOXIN; SIGNAL; REPEAT; PLASMID

EMBL; M29081; G143144; -. EMBL; M30210; G143142; -.

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RESULT 15
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local :
                                                                                                                                                                                                          1281 SVLPNSIIPELEKAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGE-RIIVKEV-- 1338
                                                                                                                                                                                                                                                                                                                                                                                                                                                       1050 VLACAFLIVPSADAVDALKTCACLLKGCRIELAKCIANPACAANVACLQTCNNRPDETEC 1109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1007
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ACT_SITE
METAL
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CHAIN
DOMAIN
                                                          729 AGYLLDKNQSDLVTNSKKFIDIFKEEGSNL
                                                                                                                 670 PNIAEQYTHQDEIYEQVHSKGLYVPESRSILLHGPSKGV-ELRNDSEGFIHEFGHAVDDY 728
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                                                                                       ----LSKEEME-----FLDEIKMEASEV 1398
                                                                                                                                                                             FNVHNRYASNIVESAYLILNEWKNNIQSD------LIKKVTNYLVDGNGRFVFTDITL 669
                                                                                                                                                                                                                                        ----IIKQSEKEYIRI-DAKVVPKSKIDTKIQE----AQLNINQEWNKALGLPKYTKLIT
                                                                                                                                                                                                                                                                      NQPGVLYNHDNEYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDAWDGYGGAVVYTR--S
                                                                                                                                                                                                                                                                                                              AGYLENG------
                                                                                                                                                                                                                                                                                                                                 KWYITSGLNPTFDAFDCQLHEFHTEGDNKLV--GNISWRIKTLDSGFFTRSAVQKFVQDP 1222
                                                                                                                                                                                                                                                                                                                                                                                            QIKCGDLFENSVVDE--FNECAVSRKKCVPRK---SDLGEFPAPDPSVLVQNFNISDFNG 1164
                                                                                                                                                                                                                                                                                                                                                                                                                               -----GADLVDST-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GRSSRPL-------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MAVATHCFTSPCHDRIRFFSSDDGIGRLGITRKRINGTFLLKILPPIQSAD----LRTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GLIDSPSINLDVRKQYKRDIQNIDALLHQSIGSTLYNKIYLYENMNINNLTATL-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            QIPIEPKKDDIIHSLSQEEKELLKRIQIDSSDFLSTEEKEFLKKLQIDIRDSLSEEEKEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ---LQRDEENFLRELSKEEMDVLDGLKMEATEV----EKLFGRALPI------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APEAFNYMDKFNEQEINLSLEELKDQRMLSRYEKWEKIKQHYQHWSDSLSEEGRGLLKKL 329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    IKNASDSDGQDLLFTNQLKEHPTDFSVEFLEQNSNEVQEVFAKAFAYYIEPQHRDVLQLY 269
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FIKTDNTCG------PEPPLVERLEKKVEEGERTIIK----------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 L---VIQSSEDYVENTEKALN------VYYEIGKILSRDILSKINQPYQKFLDVLNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LSSKVENSPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDFNT 847
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EMYKAIGG---KIYIVDGDITKHISLEALSEDKKKIKDIYGKDALLHEHYVYAKEGYEPV 161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 139;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity
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                                                                                                                                                                                                                                                                                                                                                                ---DNTKINRGIFNEFKKNFKYSISSNYMIVDINERPALDNERLKWRIQLSPDTR 543
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          809 AA;
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34 293
34 293
10 420
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93786 MW;
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                                                                                                                                               -EEIEEEVEKEVEKVGRTEMTLFQRLAEGFNELKQDEENFVRE------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1.8%; Score 132; DB
17.2%; Pred. No. 2.4;
                                                                                                                                                                                                                                                                                                       -----KLILQRNIGLEIKDVQ----------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SAFRSGESKGIFDIVPLPSKNELKELTAPLLLKLVG 1049
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       POTENTIAL.
ZINC (CATALYTIC) (POTENTIAL).
; D81B6EBB CRC32;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mismatches 254;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DB 1; Length 809;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (POTENTIAL)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels 300;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RKL 950
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local S
Matches 210
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     STRAIN-S288C / AB972;
BARRELL B.G., BADDCOCK K., BANKIER A.T., BOWMAN S., BROWN D.,
CHURCHER C.M., CONNOR R., COPSEY T., DEAR S., DEVLIN K., FRASER
GENTLES S., HAMLYN N., HORSNELL T.S., HUNT S., JAGELS K., JONES
LOUIS E., LYE G., MOULE S., MOULE T., ODELL C., PEARSON D.,
RAJANDREAM M.A., RILES L., ROWLEY N., SKELTON J., SMITH V.,
WALSH S.V., WHITEHEAD S.; ROWLEY N., SKELTON J., SMITH V.,
WALSH S.V., WHITEHEAD S.; SUBMITTED (DEC-1994) TO EMBL/GENBANK/DDBJ DATA BANKS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   YIO9_YEAST
P40457;
01-FEB-1995
01-FEB-1995
01-FEB-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
785 WYILSSKVENSPEDYIFVYYKGRNDAW------DGYGGSVLYTRSAVLPESIIPELQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PIR; S48385; S48385.
HYPOTHETICAL PROTEIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EMBL; Z47047; G763197; -. EMBL; Z38059; G557774; -.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SACCHAROMYCES CEREVISIAE (BAKER'S YEAST).
EUKARYOTA; FUNGI; ASCOMYCOTA; HEMIASCOMYCETES; SACCHAROMYCETALES;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             01-FEB-1995 (REL. 31, CREATED)
01-FEB-1995 (REL. 31, LAST SEQUENCE UPDATE)
01-FEB-1995 (REL. 31, LAST SANOTATION UPDATE)
HYPOTHETICAL 195.1 KD PROTEIN IN DNA43-UBII I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         379 LVERLE-----KTAEEGEKLLIKEAVEIEEEVEKEVEKVRDTEMTLFQRLLEGFKELQ 431
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SACCHAROMYCETACEAE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Local Similarity
                                                                         CQLHEFHTEENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLYQDD
                                                                                                             TTIEKL---SSEIENL---DKELRKTKFQYK-----FLDQNSDASTLEPTLRKELEQIQ
                                                                                                                                                  VSRKKCVPRKSDVGDFPVPDPSVLVQKFDMKDFSGKWFITRG-----LNPT----FDAFD 724
                                                                                                                                                                                                                          CTCLLKECRLELAKCISNPACAANVACLQTCNNRPDETECQIKCGDLFENSVVDEFNECA
                                                                                                                                                                                                                                                                KKELQMRLKESEISHNENKMDFSSKEGQY-KAKIKELENNLERLRSDLQSKIQEIESIRS
                                                                                                                                                                                                                                                                                                     PKDVALMVWE-----KWGQFAKTAIVAI-----FILSVASKADAVDALKT
                                             VQLKDANS-----
                                                                                                                                                                                      C----KDSQLKWAQ------SLLTELSNKE
                                                                                                                                                                                                                                                                                                                                             --VPSYIHVEKERASTELSQSRIKIKSL-EYEISKLKKETASFIPTKESLTRDFEQCCKE
                                                                                                                                                                                                                                                                                                                                                                                                                                                          ---MALAPHSNF--LAN-----HETIKYYVGSKLPGHKRFSWGWEDYFGSIVVAKICSS
                                                                                                                                                                                                                                                                                                                                                                                 RRIPRYFR-KSPRICCGLDSRGLQLFSHGKHNLSPAHSINQN-VPKGNS------GCKF
                                                                                                                                                                                                                                                                                                                                                                                                                         KKKTTLEDFENFKGLAKEKERMLEEAIDHL---KAELEKQKSW------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                STEENKANTNSVTSMEAAREKKIRELEAELSSTKVE----NSAIIQNLRKELLIYKKSQC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  QDEENFVR-----ELSKEEKEILNELQMEATEVEKLFGRALPIRKLR-------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     210;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1679 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative 188;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1.7%;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               195141 MW;
                                       -----QIQAYEEIISSNENALI----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 130; DB 1; I
Pred. No. 8.3;
8; Mismatches 396;
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Search completed: October 14, 1999, 03:57:50 Job time: 2383 sec



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Result
No.
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Perfect score:
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sp_mhc:*
sp_organelle:*
sp_phage:*
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sp_bacteria:*,
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sp_unclassified:*
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Q40251
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   073332 arabidopsis
077320 plasmodium
09yvt6 melanoplus
092878 homo sapien
P70888 bacteroides
067124 aguifex aeo
043663 homo sapien
                                                                              Q90337 cypinus ca
Q90337 cypinus ca
Q29230 archaeoglob
Q25662 plasmodium
Q13246 homo sapien
Q13246 homo sapien
Q36024 plasmodium
Q51465 borrelia bu
Q96275 plasmodium
Q921V0 helicobacte
P91349 caenorhabdi
Q61201 caenorhabdi
Q61201 caenorhabdi
Q6583 aquifex aeo
Q49547 mycoplasma
Q59066 methanococc
Q12176 saccharomyc
Q00756 oryctolagus
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Q40511 lactuca sat
Q39249 arabidopsis
Q26223 plasmodium
Q26216 plasmodium
Q49525 mycoplasma
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Q85431 rice stripe	018392 drosophila	059462 pyrococcus	O42263 xenopus lae	Q04834 xenopus lae	Q48673 lactococcus	042352 cyprinus ca	Q28641 oryctolagus	Q49546 mycoplasma	028714 archaeoglob	066878 aquifex aeo	096133 plasmodium	P91121 caenorhabdi	043254 homo sapien	Q90339 cyprinus ca	062175 caenorhabdi

ALIGNMENTS

PESIIPE 833	774 HDNEYLLYQDDWYILSSKVENSPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLP	Qy	
YPGILYN 300	241 RGLNPTFDAFDCQLHEFHTEENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYN	дb	
YPGILYN 773	714 RGLNPTFDAFDCQLHEFHTEENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPK	Qy	
SGKWFIT 240	181 QIKCGDLFENS; VDEFNECAVSRKKCVPRKSDVGDFPVPDPSVLVQKFDMKDFSGKWFIT	Db	
SGKWFIT 713	654 QIKCGDLFENSTYDEFNECAVSRKKCVPRKSDVGDFPVPDPSVLVQKFDMKDF	Qy	
RPDETEC 180	121 VAIFILSVASKADAVDALKTCTCLLKECRLELAKCISNPACAANVACLQTCNNRPDETEC	Db	
RPDETEC 653	594 VAIFILSVASKADAVDALKTCTCLLKECRLELAKCISNPACAANVACLQTCNN	Qy	
QFAKTAI 120	61 RICCGLDSRG); ZLFSHGKHNLSPAHSINQNVPKGNSGCKFPKDVALMVWEKWGQFAKTAI	Db	
QFAKTAI 593	534 RICCGLDSRGL;LFSHGKHNLSPAHSINQNVPKGNSGCKFPKDVALMVWEKWG	Qy	
RYFRKSP 60	1 MALAPHSNFLANHETIKYYVGSKLPGHKRFSWGWEDYFGSIVVAKICSSRRIPRYFRKSP	Db	
RYFRKSP 533	474 MALAPHSNFLANHETIKYYVGSKLPGHKRFSWGWEDYFGSIVVAKICSSRRIP	Qy	
78; 0; Gaps	DB 10; Length 4 2.5e-139; es 0; Indels	Quer Best Matc	
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	135 478	FT C	
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	U34817; AAC50031.1;		
	Submitted (AUG-1995) to the EMBL/GenBank/DDBJ databases.		
	STRAIN=XANTHI; TIESUE=LEAF;	RC S	
	SEQUENCE FROM N.A.		
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eae;	cots; Asteridae; euasterids I;		
ledons;	<pre>spermatophyta; Magnoliophyta; eudicoty</pre>		
pophyta:	Nicotiana tabacum (Common tobacco).	SOS	
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	01-JAN-1999 (Trembirel. 09, Last annotation update)		
	TrEMBLIEL.		
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	40593 PRELIMINARY; PRT; 478 AA.	Z G	
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RESULT Q40251
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; euphyllophytes; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Asteridae; euasterids II; Asterales; Asteraceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE
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proc. Natl. Acad. Sci. U.S.A. 93:6320-6325(1996)
EMBL; U31462; AAC49373.1;
MENDEL; 8691; LACsa; Vdel; 1.
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Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1 MALSLHTVFLCKEEALNLYARSPCNERFHRSGQPPTNIIMMKIRSNNGYFNSFRLFTSYK 60
                                                                                                                                                   DDWYILSSQIENKPDDYIFVYYRGRNDAWDGYGGSVIYTRSPTLPESIIPNLQKAAKSVG
RDFNNFITTDNSCGPEPPLVERLEKTAEEGEKLLIKEAVEIEEEVEKEVEKVRDTEMTLF
                                                       RDFNNFITTDNSCGPEPPLVERLEKTAEEGEKLLIKEAVEIEEEVEKEVEKVRDTEMTLF 420
                                                                                                                 DDWYILSSQIENKPDDYIFVYYRGRNDAWDGYGGSVIYTRSPTLPESIIPNLQKAAKSVG
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Pred. No. 1.6e-136;
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VIOLAXANTHIN DE-EPOXIDASE
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SIGNAL
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Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; euphyllophytes; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae; eurosids II; Brassicales; Brassicaceae;
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01-JAN-1999 (TrembLrel. 09, Last and
VIOLAXANTHIN DE-EPOXIDASE PRECURSOR
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SHINN P., BUEHLER E.,
CONWAY A., CONWAY A.,
VYSOTSKAIA V., YU G.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           BUGOS R.C.,
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01-NOV-1996
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TCGPEPALVERIEKTVEEGERIIVKEVEEIEEEVEKEVEKVGRTEMTLFQRLAEGFNELK
                                                       NKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELEKAAKSIGRDFSTFIRTDN
                                                                       NKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELEKAAKSIGRDFSTFIRTDN
                                                                                                            DNKLVGNISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLYNHDNEYLHYQDDWYILSSKIE
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                  , WM
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Pred. No. 4.5e-132;
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VIOLAXANTHIN DE-EPOXIDASE
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N.A., THEOLOGIS A
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MOL. Biochem. Parasitol. 65:171-177(1994).
EMBL; LZ7838; AAAZ1304.1;
SEQUENCE 2260 **
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Eukaryota; Alveolata; Apic
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MEDLINE; 97077455.

SINHA K.A., KEEN J.K., OGUN S.A., HOLDER A.A.;

"Comparison of v.o members of a multigene family coding high-molecular mass rhoptry proteins of Plasmodium yoell Mol. Biochem. Parasitol. 76:329-332(1996).
                                                                                                                                                                          RHOPTRY PROTEIN (FRAGMENT).
Plasmodium berghei yoelii.
Eukaryota; Alveolata; Apico
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01-NOV-1996 (TrEMBLrel. 01,
01-NOV-1996 (TrEMBLrel. 01,
01-NOV-1998 (TrEMBLrel. 08,
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                                                                                                                                   SEQUENCE FROM N.A.
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1143 KNKELFEKYEQEV----TVLLNKYYAVELK-----NKFDKTKN-----YSEQI 1181
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NON_TER 1
SEQUENCE 2401 AA;
                                     806 GRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDFNTFIKTDNTCGPEPPLVERL 865
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                                                                                                                                                       -----NVSLNFNNIEMADTKSQYIL----
                                                                                                                                                                                       VGDFPVPDPSVLVQKFDMKDFSGKWFITRGLNPTFDAFDCQLHEFHTEENKLVGNLSWRI 745
                                                                                                                                                                                                                                                                                                                                                                                                                  ICSSRRIPRYERKSPRICCGLDSRGLQLFSHGKHNLSPAHSINONVPKGNSGCKFPKDVA 578
                                                                                                                                                                                                                            VSECIKNITNLKTYIVNEKNN------INTYFKNA--EEYNQ------ 1083
                                                                                                                                                                                                                                                                -PACAANVACLQTC-----NNRPDETECQIKCGDLFENSVVDEFNECAVSRKKCVPRKSD 685
                                                                                                                                                                                                                                                                                                       --VKEYTDEIEKN-----NKKINAELSNSEKIITQLKENSSLKECQSKIKSTIDDNY 1048
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16.7%;
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Pred. No. 0.26;
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                                                                                                                                                      Matches
                                                                                                                                                                                                                   Query Match
                                                                                                                                                                                                                                                                                                                                  "Selection of Mycoplasma hominis PG21 deletion mutants by in the presence of monoclonal antibody 552."; Infect. Immun. 63:3336-3347(1995).

EMBL; UZ1962; AAA81013.1; -. SEOIIFNOTE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        049525, PRELIMINARY; PRT; 1365 AA. 649525, 01-NOV-1996 (TIEMBLIEL 01, Created) 01-NOV-1996 (TIEMBLIEL 08, Last annotation 01-NOV-1998 (TIEMBLIEL 08, Last 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDLINE; 95369882.
JENSEN L.T., LADRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mycoplasma hominis.
Bacteria; Firmicutes; Bacillus/Clostridium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1612 LNLI--FENRLEHDKVQATNELK----DTLSDLKNKKEQILNKVKLLLHKSNELNKL 1662
                                                                                                                                                                                                                                                                                                                           SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STRAIN-MH56
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mycoplasmataceae; Mycoplasma
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                                                                272 TRSAVQTEVQDPCLPGALYNHDNEFLHYQDDWYILSSQIENKPDDYIFVYYRGRNDAWDG 331
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1227 ILDIQLSVEPFKI-----KFLKIKDLRTKSDDCLKETKDIETKISNLSIDTQETKL-IEN 1280
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                                                                                                                                                   Local Similarity
mes 209; Conserv
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                                                                                                                                                                                                                                                                                                                           1365 AA;
                                                                                                                                        Conservative 187; Mismatches 420;
                                                                                                                                                                            2.1%; Score 156;
16.8%; Pred. No. 0.
                                                                                                                                                                                                                                                                                                                    154982 MW; 23BE4182 CRC32;
-NKNNP--NYSE----LISQLTSKRD-----SKNSVTDS 319
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  1301 DFSTFIR-----TDNTCGPEPALVERIEKTVEEGERIIVKE-----VEEIEEEVEKEV 1348
                                                                                                                                        1010 GIESLQKW-QDLMDDSVLSVDDS----LKDDFNKALRVLVGDYTKNPPVSSWFINKRNRS 1064
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              S-----RPLSAFRSGFSKGIFDIVPL------PSKNEL-KELTAPLLLKLVG 1049
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ---NNPNYSEL-----ISQLTSKRDSKNSVTDSSNKSDIESANTELKQALNTAKAKK 814
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NANT-----LSAKLTDKDNTIQQAKTELEKEIQKANQAIKSNNTASMQSAKSSLD
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                                                                                                                                                                                                                                                                                                                                                                        NRPDETECQIKCGDLFENSVVDEFNECAVSRKKCVPRKSDLGEFPAPD-----PSVLVQ 1155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SSIDNELRPL---KNDLQSKIEEFGPIRNTNFSWISSKLETTKNKLAEELT----- 863
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        HCFTSPCHDRIRFFSSDDGIGRLGITRKRINGTFLLKILPPIQSAD-----LRTTGGRS 1009
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AKVAEITKKLETFNKDKEAKFNELKQTRNQI-----QEFINTNK----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SKLFEGFKELQ----RDEENFLRELSKEEMDVLDGLKMEATEVEKLFGRALPIRKLMAVAT 955
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TDNTCGPEPPLVERLEKKVEEGERTIIKEVEEIEEEVEK------VRDKEVTLF 898
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ------KNSVTDSSNKSDIESANTELKQALAKANADKVQADNLAKSIKEQLNNSVS
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                                                                                                                                                                                                                                                                              NENISD--FNGKWYITSGLNPTFDAFDCQLHEFHTEGDNKLVGNISWRIKTLDSGFFTR- 1213
                                                                                                                                                                                                                                                                                                                                                                                                                        -----KADAIKNNPSSSKQALKDSSQQVQKLGNELLKTITE----EFGKVETKN 907
                                                                                                                                                                                    -- SAVQKFVQDPNQPGVLYNHDNEYLHYQDDW-----YILSSKIENKPEDYIFVYYRGRN 1265
                                                                                                                                                                                                                                  ESTIKKVIVNIQAHIRNNIN------SQYRLEAD-KLIAN------MKRGYGDKV 1009
                                                                                                                                                                                                                                                                                                                            SNIGYRLFKLAQAEQFNNSDVDKLKNAWEEKQTLLSKKQKLGNQSTKDYLTQLSTEMSTQ
                                              IENYQNLRNLILVRENEILLDKAKDLDKRAEKTIKFVDENINSLDQRAKRLKQEILNAKN 1124
                                                                                          -----INTNKNNPNYSELISQLTSKRDSKNSVTDSSNKSDIESANTEL 489
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ----VQKADQAIKSNNTASMQSAKSSLDAKVAEITKKLETFNKDKEA 588
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Q90337;
Q90337;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1125 DLSNFTLNHQKNQFTAKDITPKISCLENKLNEINQYLLPIIKEKAVSKISEIEKN-KKEL 1183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Myosin.
SEQUENCE
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Eukaryota, Metazoa; Chordata; Craniata; Vertebrata; Actinopterygii;
Neopterygii; Teleostei; Eukeleostei; Ostariophysi; Cypriniformes;
Cyprinoidea; Cyprinidae; Cyprininae; Cyprinus.
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EMBL; D89990; BAA32067.1; -.

EMBL; D80474; BAA09067.1; -.

PFAM; PF00612; IQ; 1.

PFAM; PF00063; myosin_head; 1.
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TISSUE=TAST SKELETAL MUSCLE;
MEDLINE; 97176447.
IMAI J., HIRAYAMA Y., KIKUCHI K., KAKINUMA M., WATABE S.;
"CDNA cloning of myosin heavy chain isoforms from carp fast smuscle and their gene expression associated with temperature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDLINE; 97352533.
HIRAYAMA Y., WATABE S.;
"Structural differences in the crossbridge head
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                acclimation.";
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894 SENLSDAEERCLGLIKSKIQLEGKLKETTERLEDEEEINAELTAKKRKLEDECSELKKDI
                                                                                                                                                                                                                                                                                                         782
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              662
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    379 LVERLEKTAELGEKLLIKEAVEIEEEVEKEVEKVRDTEMTLFQRLLEGFKE-----L 430
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  QQDEENFVRELSKEEKE------ILNELQME-ATEVEKLFGRALPIR------ 471
                                                                       RPDETECQIKCGDLFENSV------
                                                                                                                                                                                                                      QFAKTAIVAIF (LSVASKADAVDALKTCTCLLKECRLELAKCISNPACAANVACLQTCNN 646
                                                                                                                                                                                                                                                                                                                                                                                                                                                        KVLNASVIPEGOFIDNKKATEKLLGSIDVDHNQYKFGHTKVFFKAGLLGTLEEMRDEKLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RSTHPHFVRCLIPNESKTPGLMENFLVIHQLRCNGVVEGIRICTKGFPSRIHYGDFKQRY 721
                                                                                                                                                      PLLKTAESE----KEMASMKENFEKMKEDLTKALAKKKELEEKMVSLVQEKNDLLLQVTSE
                                                                                                                                                                                                                                                                                                     HLVTMTQALARGYVMR--KEFVKMMERREAIYSIQYNIRSFMNVKHWP---WMKVYFKIK
                                                                                                                                                                                                                                                                                                                                                                            RYFRKSPRICCGLDSRGLQLFSHGKHNLSPAHSINQNVPKGNSGCKFPKDVALMVWEKWG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -KLRMALAPHSNFLANHETIKYYVGSKLPGHKRFSWGWEDYF---GSIVVAKICSSRRIP 526
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1933 AA; 221092 MW;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2.1%; Score 156; DB 17.0%; Pred. No. 0.9;
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Last annotation update)
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                                                                           -----VDEFNECAVSRKK-----CVPRKSDV 686
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               953
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MEDLINE: 98049343.

KLENK H.-P., CLAYTON R.A., TOMB J.-F., WHITE O., NELSON K.E., KETCHUM K.A., DOSSON R.J., GWINN M., HICKEY E.K., PETERSON J.D., RICHARDSON D.L., KERLAVAGE A.R., GRAHAM D.E., KYRPIDES N.C., FLEISCHMANN R.D., OUACKENBUSH J., LEE N.H., SUTTON G.G., GILL S., KIRKNESS E.F., DOUGHERTY B.A., MCKENNEY K., ADAMS M.D., LOFTUS B., PETERSON S., REICH C.I., MCNEIL L.K., BADGER J.H., GLODEK A., ZHOU OVERBER R., GOCAYNE J.D., WEIDMAN J.F., MCDORALD L., UTTERBACK T. COTTON M.D., SPRIGGS T., ARTIACH P., KAINE B.P., SYKES S.M., SADOW P.W., D'ANDREA K.P., BOWMAN C., FUJII C., GARLAND S.A., MASON T.M., OLSEN.G.J., FRASER C.M., SMITH H.O., WOESE C.R.,

ZHOU L.,

"The complete genome sequence of the hyperthermophilic, sulphate reducing archaeon Archaeoglobus fulgidus."; nature 390:364-370(1997).

VENTER J

EMBL; AE001032; AAB90211.1; -

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RESULT
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ID 029230
AC 022
AC 020
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                                                                                                                                                                                                                                                                                                                          029230;
01-JAN-1998 (TrEMBLrel. 05, Created)
01-JAN-1998 (TrEMBLrel. 05, Last seq.
01-NOV-1998 (TrEMBLrel. 08, Last anno
                              STRAIN=VC-16 / DSM 4304 / ATCC 49558;
                                                                                                                                                                        Archaeoglobus fulgidus. Archaeoglobales;
                                                                     SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                 AF1032
                                                                                                                                                                                                                                                                                            PURINE NTPASE, PUTATIVE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    029230
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1562 LELNQVKSEIDRKLAEKDEEMEQIKRNSQRVLDSMQSTLDSEVRSRNDALRVKK 1615
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1356 MTLFO------RLAEGFNELKQDEENFVRELSKEEMEFLDEIKM--EASEVEK 1400
                                                                                                                                                 Archaeoglobus
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1420 LQSEVEDLMIDGERANALAANLDKKQRNFD------KVLADWKQK---YEESQAEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1179
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1013
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1086 ISQFLSKIEDEQSLGAQLQKKIKELQARIEELEEEIEAERSARAKVEKQRADLSRELEEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1031
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                954 DDLELTLAKVEKEK---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGERIIVKEVEEIEEEVEKEVEKVGRTE 1355
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TDAIQRTEELEESKKKLAQRLQDAEE------SIEAVNSK---CASLEKTKQR 1419
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               KNLQQEISDLSEQLGETGKSIHEIEKAKKTVESEKAEIQTALEEAEGTLEHEESKILRVQ
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FDCQLHEFHTEGD--NKLVGNISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLYNHDNEYL 1236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -----EVKAKNALAHAVQSARHDCDLLREQYEEEQEAKAELQRGMSKANSEVAQWRAKYE
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SERLEEAGGATAAQIEMNKKREAEFQKMRRDLEESTLQHEATAAALRKKQADSVAELGEQ 1205
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EEEVEK------
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -----DDLEGSLEQEKKLRMDLERVKRKLEGDLKLAQESIMDLENEKQQSDEKIKKKDFE 1085
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRELIMINARY;
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Last annotation updat
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                              1406 LPIR 1409
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                                                                                                                                                                                                                     1231 --HDNEYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSII 1288
                                                                                                                                                                                                                                                                                                                                                                                                                   1071 ACILKGCRIELAKCIANPACAANVACLQTCNNRPDETECQIKCGDLFENSVVDEFNECAV 1130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1026 DIVPLPSKNELKELTAPL---------LIKLVGVLACAFLIVPSADAVDALKTC 1070
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PFAM; PF00470; RecF; 1.
Hypothetical protein.
642 EEIR 645
                                                                                                                              551 KELKSSLREI-
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               854 TCGPEPPLVERLEKKVEEGERTI---IKEVEEIEEEVEKVRDKEVTLFSKLFEGFKELQR 910
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Local Similarity
                                                                                       EKVGRTEMTLFQRLAEGFN----ELKQDEENFVRELSKEEMEFLDEIKMEASEVEKLFGKA 1405
                                                                                                                                                    PELEKAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGERIIVKEVEEIEEEVEKEV 1348
                                                                                                                                                                                       SSHDAE-----KLSAESEE----YRKVKERLDGLRGQQKILLSSA---SRI
                                                                                                                                                                                                                                                                                                                                               SRKKCVPRKSDLGEFPAPDPSVLVQNFNISDFNGKWYITSGLNPTFDAFDCQLHEFHTEG 1190
                                                                                                                                                                                                                                                                                                                                                                                                                                                    D-----NSKLEEITKRIEELERELERFEKSHRLLE-----TLKPKMDRMQGIK--
                                                                                                                                                                                                                                                        IMAEYTREMKRIAEELAKADEIEKKLKERLEKVEKALEKQETVLKYRQMVDELKALENEL
                                                                                                                                                                                                                                                                                     KLKKLIAKKSSLKTRGAQLKKAVEE-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   -----SILEKLLSEINQALRDVEKREGDLTREAAGIQAQLKKAEE 329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     137;
                                                                                                                                                                                                                                                                                                                                                                                    -----KMYDLLSKAKEEE-KEITE 404
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                                                          ·QSLRPFYNKWLELKDAESRLESELKRRE-KLEDEISEAIAKLEEANGKA
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20.6%; Pred. No. 0.34;
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                                                                                                                         -EEAL-KNVESERGELHRKIREEGFESLEELEREV
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WERNER E.B., TAYLOR W.R., HOLDER A.A.;
Submitted (DEC-1995) to the EMBL/GenBank/DDBJ databases.
EMBL, U43145; AAC63403.1; -.
SEQUENCE 1939 AA; 229001 MW; 5FC4E4C2 CRC32;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                01-NOV-1996 (TrEMBLrel. 01, Created)
01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
01-NOG-1998 (TrEMBLrel. 07, Last annotation update)
REPEAT ORGANELLAR PROTEIN.
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                                    1013 LSAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKLVGVLACAFLIVPSADAVDALKTCAC 1072
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  243 -----TIN-----SFEEKRKM 264
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             548
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  152 KINNKEIITLKREEK--LNDIESEYIEKNKEKEKL---NYEVTNIKMSL------D 196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        437 FVRE-----LSKEEKEILNELQME----ATEVEKLFGRALPIRKLRMALAPHSNFLANHE 487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       380 VERLEKTAEEGEKLLIKEAVEIEEEVEKEVEKVRDTEMTLFQRLLEGFKELQQD---EEN 436
                                                                                                                                                                                                                                                                                                                                                                                                     322 NTLKSDLSKNACOMEVYKLEIKD---LSQSLVEKERE-----IFEIKNEY----DD-- 366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      288
                                                                                491
                                                                                                                   953 VATHCFTSPCHDRIRFFSSDDGIGRLGITRKRINGTFLLKILPPIQSADLRTTGGRSSRP 1012
                                                                                                                                                                                                 897 LFSKLFEGFKELQRDE----ENFLRELSKEEMDVLDGLKMEATEVEKLFGRALPIRKLMA 952
                                                                                                                                                                                                                                            414 LEIE----
                                                                                                                                                                                                                                                                                  847 TFIKTDNTCGPEPPLVERLEKKVEEGERTIIKEVEEIEEEVEKVR------DKEVT 896
                                                                                                                                                                                                                                                                                                                           366 ----KINNMKEKLSSI-----ND--KGIDNTVLHSEEEKI-NKLLKEKETELNEIHKKYN 413
                                                                                                                                                                                                                                                                                                                                                               787
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Match 2.0%; Score 151; DB 5; Length 1939; Local Similarity 17.5%; Pred. No. 1.7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              95 VKEYEVKIEELEKEL --- KLEKEKQINKEYEKELNEKSEFIKRQMELLKEKELNINLKEN 151
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           9
                                                                                                                                                                                                                                                                                                                                                                                                                                            HEFHTEENKLVGNLS-WRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLYQDDWY 786
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SHGKHNLSPAHSINQNVPKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADA 607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KLTCEVQEKKDNLEKIN------KKVIEKENNLRELKEFMKEKNEIIESLDG----- 243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TIKYYYGSKLPGHKRFSWGWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLF 547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      KENEIIIEKLKDIESRE---------KDFKSK-----EEKFASMENEL 321
                                                                                                                                                                                                                                                                                                                                                               ILSSKVENSPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDFN 846
                                                                                -----ILNKDKQTLG----- 513
                                                                                                                                                           LLEKKTEDAKEGHKNELNELNQLSKLNKEK----DNIKNENTEL------- 491
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          -----SKLIEKEENFAN----
    ---NDIKTLN---
                                                                                                                                                                                                                                            -----TIKNELNEKEEELEKNKKAHTVEVTNLTKEIK 449
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1939 AA.
    -DLINNLKN--- 528
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ---- KQAKLE 287
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	612 KTCTCLACAAN 637	VΩ	
	1175NVKERESERNO-CNEKPOMDLEVKEISLDSYNAOLVOLEAMLRNKELKLO	Dβ	
	552 HNLSPAHSINOMPRGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADAVD	Qy	
	1121 KSEAGGLKQETWELKEEQNKMQKEVNDLLQENEQLMKVMKTKHECQNLESEPI	Дb	
	501 KRESWGWEDY:'GSIVVAKICSSRRIPRYFRKSPRICGL	Оу	
	1065 NRKNELEQLKEAFAKEHQEFLTKLAFAEERNQNLMLELETVQQALRS	Дb	
	450NELQMEATEVEKLEGRALPIF	QΥ	
	1005 EREKSISELSDYKQEKLILLQRCEETGNAYEDLSQKYKAAQEKNSKLECLLNECTSLCE 1064	JQ	
	RELS	Qy	
	379 LVERLEKTAEEGEKLLIKEAVELEEEVEKEVE-KVRDIEMILEQRILEGEREDGG 432 	Qy Db	
60;	Match 2.0%; Score 147; DB 4; Length 3113; ocal Similarity 18.4%; Pred. No. 5.6; s 240; Conservative 188; Mismatches 443; Indels 434; Gaps		
	MEDLINE, 95379848. MEDLINE, 95379848. ZHU X., MANCINI M.A., CHANG K.H., LIU C.Y., CHEN C.F., SHAN B., JONES D., YANG-FYNG T.L., LEE W.H.; "Characterization of a novel 350 kilodalton nuclear phosphoprotein that is specifically involved in mitotic-phase progression."; MOI. Cell. Biol. 15:5017-5029(1995). EMBL; U30872; AAA82935-1; EMBL; U30872; AAA82935-1; SEQUENCE 3113 AA; 357281 MW; 605779C3 CRC32;	RX RX RA RT RT RT DR	
	1-NOV-1996 (TIEMBLIEL O1, Last 1-NOV-1998 (TIEMBLIEL O18, Last 1)-NOV-1998 (TIEMBLIEL O18, LAST 1)-	R C C C C C C C C C C C C C C C C C C C	
	ULT 10 246 Q13246 PRELIMINARY; PRT; Q13246; PRELIMINARY; PRT;	RES ID AC	
	1351 VGRTEMTLFQRLAEGENELKQDEENFVRELSKEEMEELDEIKMEASEVEKLFG 1403	ДУ	
	1294 AAKSIGRDFST FIRTDNTCGPEPALVERIEKTVEEGERIIVKEVEBLEEEVEKEVEK 1390	рь	
	NMHMFRSICTKIDMPYSEN 687	рь	
	1234 EYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSYLPNSIIPELEK 1293	Qy	
	1177 DAFDCQLHEFHTEGDNKLVGNISWRIKTLDSGFFTRSAVQKFVQDDNQPGVLYNHDN 1233	Qy.	
	EISILRNSIYVKEKEFI 604	Db Vy	
	528) Db	
	73 LLKGCRIELAKCIANPACAANVACLQTCNNRPDETECQIKCGDLFEN	Qy	

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RESULT 11
Q03767
ID Q03767
AC Q03767
DT 01-NOV
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Q03767 PRELIMINARY; PRT;
Q03767;
Q1-NOV-1996 (TrEMBLrel. 01, Created)
                                                                                                                                                                                                  2059
                                                                                                                                                                                                                                                                                                                                                                                                                  1942
                                                                                                                                                                                                                                   1364 EGFNELKQDEENFVRE-----LSKEEMEFLDEIK-MEASEVEK 1400
                                                                                                                                                                                                                                                                                       1999 HCIQVAEAEVKEKTELLQTLSSDVSELLKDKTHLQEKLQSLEKDSQALSLTKCELENQIA 2058
                                                                                                                                                                                                                                                                                                                                        1307 RTDNTCGPEPALVERIEKTVEEGERIIVKEVEEIEEE---VEKEVEKVGRTEMTLFQRLA 1363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1198
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1144 --EFPAPDPSVLVQNFNISDFNGKWYITSGLNPTFDAFDCQLHEFHTE----GDNKLVGN 1197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1085 IANPACAANVACLQTCNNRPDETECQIKCGDLFENSVVDEFNECAVSRKKCVPRKSDLG- 1144
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1792 RDRKVESLLNEMKELDSKLHLQEVQLMT------KIEAC-----IELEKI 1830
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1732 PPGEDKTQGSSECISELSFSGPNALVPMDFLGNQEDIHNLQLRVKETSNENLRLLHVIED 1791
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1253
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1034 -----NELKELTAPLLLKLVGVLACAFLIVPSADAVDALKTCACLLKGCRIELAKC 1084
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1676 HTSETTERTPKHD-VHQICDKDAQQDLNLDIEKITETGALK---PTGECSGEQSPDTNYE 1731
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1500 EQTGDMSLLSNLEGAVSANQCSVDEVFCSSLQEENLTRKETPSAPAKGVEELESLCEVYR 1559
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1442 KAENLVLSTNLRNFQGDLVKEMQLGLEEGLVPSLSSSCVPDSSSLSSLGDSSFY--RALL 1499
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1400 QMHFAELQEK-------FLSLQSEHKILHDQHCQ--MSSKMSELQTYVDSL 1441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1343 NEVKILNDDSGLLHGELVEDIPGGEF----GEQPNEQHPVSLAPLDESNSYEHLTLSDKEV 1399
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1288 LQCSLQTTMNKLNELEKICEILQAEKYE--LVTELND---SRSECITATRKMAEEVGKLL 1342
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1228 KEKECIQHELQTIRGDLETSNIQDMQSQEISGLKDCEIDAEEKYISGPHELSTSQNDNAH 1287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 874 RTIIKEVEEIEEEVEK---VRDKEVTLFSKLFEG-----FKELQRDEENFLRELSKE 922
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    726 QLHEFHTEENKLYGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLYQD--
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                                                                                                                                                                                    ----QLNKEKELLVKESESLQARLSESDYEKLNVSKALEAALVEK 2099
                                                                                                                                                                                                                                                                                                                                                                                                                                              P-----EDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELEKAAKSIGRDFSTFI 1306
                                                                                                                                                                                                                                                                                                                                                                                            QKVIVCLEEELSVVTSERNQL----RGELDTMSKKTTALDQLSEKMKEKTQELESHQSECL 1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLYNHDNEYLH-----YQDDWYILSSKIENK 1252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          KLEYFSCDHQELLQRVETSE-----GLNS-----DLEMHADKSSREDIGDNVAKVN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DSWKERFLD-----VENELSRIRSEKASIEHEALYLEADLEVVQTEKLCLEKDNENK 1941
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -----RTTGGRS-----SRPLSAFRSGFSKGIFDIVPLPSK-------------
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             QSL----EKLEEKMESQGIMKNKEIQELEQLLSSERQELDCLRKQYLSENEQWQQKLTSV 1615
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ------PCHDRIRFFSSDDGIGRLGITRKRINGTFLLKILPPI-----QSADL--- 1003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TLEMESKLAAEKKQTEQLSLELEVARLQLQGLDLSSRSLLGIDTEDAIQGRNESCDISKE 1675
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PE----SIIPELQTAAQ----KVGRDFNTFIKTDNTCGPEPPL----VERLEKKVEEGE 873
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               --DWYILSSKVENSPEDYIFVYYKGRND-------AWDGYGGSVLYTRSAVL
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STRAIM-AB972;
STRAIM-AB972;
SARRELL B., RAJANDREAM M.A., WALSH S.V.;
SARRELL B., RAJANDREAM M.A., WALSH S.V.;
SUBMILTED (JUL-1995) to the EMBL/GenBank/DDBJ databases.
EMBL, Z50046; CAA90372.1;
SGD; L0001287; NUM1.
SFRAM; PF00169; PH; 1.
SEQUENCE 2748 AA; 313030 MW; FEEE7EDD CRC32;
                                                            1269 YEDLVKCKENPDMEFLK-EKSAKLGHTVVSNEAYSELEKKLEQPSLEYLVEHAKATNHHL
                                                                                                                                                                                                                                                                                                               1123 YLVEHAKATNHHLLSD--SAYEELVKCKENPDVEFLKEKSAKLGHTVVSNEAYSELEK-- 1179
                                                                                                                                          1218 EFLKEKSAKLGHTVVSNEAYSELEKK-----LEQPSLAYLVEHAK--ATDHHLLSDSA 1268
                                                                                                                                                                                                                                                                                                                                                                                               1063 HAKATNHHLLSDSAYEELVKCKENPDVEFLKEKSAKLGHTVVSNEAYSELEKKLEQPSLE 1122
618 LKECRLE-LAKCISNPAC-----AANVACLQTCNNRPDETECQIKCGDLFENSVYDEFN 670
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1003 TNHHLLSDSAYEDLVKCKENPDMEFLKEKSAKLGHTVVSNEAYSELEKKLEQPSLEYLVE 106;
                                                                                                                                                                                                                                                                                     464
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 949 YE-----DLVKCKENPDMEFLKEKSAKLGHTVVSNEAYSELEKKLEQPSLEYLVEHAKA 1002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STRAIN-AB972;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        276 VQTFVQDPDLPGALYNHDNEFLHYQ------DDWYILSSQIENKPDDYIFVYYRG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        216 VQNFNMKDFSGKWYITSGLNPTFDAFDCQLHEFHMENDKLVGNLTWRIKTLDGGFFTRSA 275
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    857 EKKLEQPSLAYLVEHAKATDHHLLSDSAYEDLVKC-----KENSDV-EF-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        170 ECQI------KCGD--LFENSVYDQFNECAVSRKKCVPRKSDVGEFPVPDRNAV 215
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MURPHY L., RICHARDS C., Submitted (JUL-1995) to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Saccharomyces cerevisiae (Baker's yeast).
Eukaryota: Fungi; Ascomycota: Hemiascomycetes; Saccharomycetales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    801 LAYLVEHAKATÜH----HLLSDSAYEELVKCKENPDMEFLKEKSAKLGHTVVSNEAYSEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           116 TFVIVPRVDAVDALKTCACLLKECRIELAKCIANPSC-----AANVACLQTCNNRPDET
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    748 SAYEDLVKCKENPDV-----EFLKEKSAKLGHTVVSSEEYSELQRKYSELEKEVEQPS 800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Saccharomycetaceae; Saccharomyces
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           62 SSFSDSSHCKDKSQICSIDTSFEEIQRFDLKRGMTLILEKQWRQF-----IQLAIVLVC 115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Local Sir
hes 283;
                                                                                                   PKGNSGCKFPKDVALMVWEKWGQFAKTATVAIFILSVASKAD-----AVDALKTCTCL 617
                                                                                                                                                                                 -----ICSSRRIPRYFRKSPRICCGLDSRGL-QLFSHGKHNLSPAHSINQNV 564
                                                                                                                                                                                                                            -----KLEQ---PSLAYLVEH-----AKATDHHLLS---DSAYEDLVKCKENPDV 121
                                                                                                                                                                                                                                                                      GRALPIRKLRMALAPHSNFLANHETIKYYVGSKLPGHKRFSWGWEDYFGSIVVAK-----
                                                                                                                                                                                                                                                                                                                                                      --VEKVRDTEMTLEQRLLEGFKELQQDEENFVRELSKEEKEILNE--LQMEA-TEVEKLF 463
                                                                                                                                                                                                                                                                                                                                                                                                                                        ----NNFITTDNS-----CGPEPPLVERLEKTAEEGEKLLIKEAV-EIEEEVEKE---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RND---AWDGYGGSV------IYTRSPTLPESIIPN----LQKAAKSVGRDF---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -----LKEKSAKLGHTVVSNEAYSELEKKLEQ------PSLAYLVEHAKATDHHLLSDSA
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1.9%; Score 146; DB 3; Length 2748; ilarity 17.9%; Pred. No. 5.4; Conscrvative 232; Mismatches 581; Indels 486; Gaps
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the EMBL/GenBank/DDBJ databases.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1378 EYLVKHAEQIQSKIISISDFNTLANPSMEDMASKLQKLEYQIVSNDEYI--ALKNTMEKP 1435
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1730 IDYMQEKAARN------EMVLL--RNEEKE----ALQKKIEYPSLTFLIEKAA 1770
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1174 PTFDAFDCQLHEFHTEGDNKLYGNISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLY---- 1230
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1771 GMNKILVDQIEYDET-----IRKC------NHPTRMELEESCH 1802
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1062 -----DAVDALKTCACLLKGCRIELAKCIANPACAANVACLQTCNNRPDETECQIKCG 1114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1002 LRTIGGRSSRPLSAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKLVGVLACAFLIVPSA 1061
                                             026024;
01-NOV-1996 (TrEMBLrel. 01, Created)
01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
01-NOV-1998 (TrEMBLrel. 08, Last annotation update)
TOPOISOMERASE I.
                                                                                                                                                          Q26024
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                1951 HPTVIHLSEKASLLNKVLVDKD------DFATMSRSIE----KPTIDFLSTKALSMG- 1998
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  Plasmodium falciparum.
Eukaryota; Alveolata; Apicomplexa; Haemosporida; Plasmodium.
                                                                                                                                                                                                                                                                         2058 AIFDSIIVENIEYQQLVNTTSP 2079
                                                                                                                                                                                                                                                                                                                      1386 EFLDEIKMEASEVEKLFGKALP 1407
                                                                                                                                                                                                                                                                                                                                                                    1998 KILVNESTHKRNEKLLSEPDSEFLTMKAKEQGLIIISEKEYSELRDQIDRPSLDVLKEKA 2057
                                                                                                                                                                                                                                                                                                                                                                                                                  1331 RIIVKEV-----EEIEEEVEKEVEKVGRTEMTLFQRLAEGFNELKQDEENFVRELSKEEM 1385
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1897 SEKIDHIVVPLSEYNLMVTNYRNPSLSYLKEKAVLNNHILIKEDDYKNIL-----AVSE 1950
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         912 -EENFLRELSKEEM-------DVLDGLKMEATEVEKLEG-----RALPIR 948
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                                                                                                                                                                   839 AA
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~	LQTCNNRPDE; 3CQIKCGDLFENSVVDERMECAVSRKKCYRKSDLGEFPAPDPSV 1132 KRKSSHLTSDYNILSDASDSTINDVNNEYDENGINKKLSYATTVGKENDVDDKNSP-IEV 666	1097	Db Db
,	110	: :	
	MPTLSAKVFRTYNASITLDOOLKRIKEVYGKTTYSLYSG-ETELHK	טו ו	g :
J1	LLKLVGVLACAFLIVPSADAVDALKTCACLI	<u>.</u>	O V
		521	gg Qg
~	DSKEQNINDEXVNXIPEPINLESISSEDCXITTEDFLGRUSS	~ ~	b B
	VLDGLKMEATEVEKLFGRALPIRKLMAVATHCFTSPCHDRIRFFSSDDGIGRLG 97	923	Qy
	DELALRY-GGEKDIDEEADTVGCCSLRVEHI	434	Дb
	VEEGERTIIKEVEEIEEEVEKVRDKEVTLFSKLFEGFKELQRDEENFLRELSKE 92	863	Qy
	AQSKEKGYKDLMKYENARKLKSCVHKIREDYKNKMKNKIIDKQLGTAVYLI 433	382	Дb
	TRSAVLPESIIPELQTAAQKVG	807	Qy
	S	332	Db
	WYILSSKVENSPEDYIFVY	759	Qy
	TYALVDWIREKISSNE	272	Db
	FSGKWFITRGLNPTFDAFDCQLHEFHTE	704	Qy
	ENETKLKKGDESNFKFIDFMPIKDHLLKLREEKLNKTKEE 271	232	Db
	DLEENSVVDEFNECAVSRKKCVPRKSDVGDFPVPDI	650	δ
	KSEELATYWCSAIGSDYCTKEKFILNFFKTFINSLENDNIIKQ 231	189	Db
	AIVAIFILS/ASKADAVDALK	590	Qy
		159	Dβ
	DSRGLQ	530	Qy
	KLIKKSEENFEPINRW-WEKIDDQTDIQWNY	129	Db
	LRMALAPHSNFLANHETIKY	470	Qy
	YVEKKSRTVKDETKLTNVIKKETQNN	79	Dζ
	DIEMTLFQRLLEGFKELQQDEENFVRELSKEEKEILNE	410	Qy
	RSSKKESIKKOKSNSELGIKKNTKKSLGIKKEEEKKKO	24	Db
	QKAAKSVGRDENNFITTDNSCGPEPPLVERLEKTAEEGEKLLIKEA	352	Qy
46;	tch 1.9%; Score 144.5; DB 5; Length 839; al Similarity 17.3%; Pred. No. 1.3; 191; Conservative 176; Mismatches 390; Indels 347; Gaps	ery Ma st Loc tches	Qu Be Ma
	Copoisomerase. 339 A.F.; 98109 MW; 1	Isome: SEQUE	SQ
	-154(1995) 154(1995) 3; CAA58716	Plasmodium I Gene 163:151 EMBL; X83758	
	CILBEY E	MEDLIN TOSH N	RA RA
	CE FROM N.A.	SEQUE	RP

FNMKDFSGKWYITSGLNPTFDAFDCQLHEFHMENDKIVGNLTWRIKTLDGGFFTRSAVQT 278 : : :: :: :: :: :: bb -NIVEFRDRYYDEVNIFVTQLBESKLQYSKWQGEMDSNLKNIE	218	LEKOWROFIQLAIVLVCTFVIVPRVDAVDALKTCACLLKECRIELAKCIANPSCAANVAC 158 :::	RSNNGYFNSFRLFTSYKTSSFSDSSHCKDKSQICSIDTSFEETQRFDLKRGMTLI 98	y Match 1.9%; Score 144; DB 2; Length 2166; Local Similarity 16.8%; Pred. No. 5.1; hes 268; Conservative 275; Mismatches 556; Indels 500; Gaps 71;	13 MW; F2899AOA CRC32;	.1;	. WAITHEY L., MCDONALD L., ARTIACH P., BOWMAN C., PUJII C., COTTON M.D., HORST K., ROBERTS K., HATCH B., VENTER J.C.; JEDICE of a Lyme disease spirochaete, Borrelia	WHITE O., KETCHUM K.A., DOSSON R., HICKEY E.K., GWINN M., TOMB JF., FLEISCHKANN R.D., RICHARDSON D., KERLAVAGE A.R., QUACKENBUSH J., RICHARDSON D., PALMER N., ADAMS M.D., GOCAXNE J.D., WELDMAN T.	M.N.A. 35210 / B31; 65943. CASJENS S., HUANG W.M., STITTON G.G. CTAVTON B.A.	burgdorferi (Lyme disease spirochete). ; Spirochaetales; Spirochaetaceae; Borrelia.	-1998 (TrEMBLrel. 06, Created) -1998 (TrEMBLrel. 06, Last sequence update) -1998 (TrEMBLrel. 08, Last annotation update) ETICAL 254.2 KD PROTEIN.	PRELIMINARY; PRT; 2166 AA.	826	KVELLNOMKVRDOKTIALGTSKINMEPLDE- 1391 KVELLNOMKVRDOKTIALGTSKINYMDPR 802	1331 758	SKIKKOIE 739 GGANNYTBEGYN DAGGIELENENENENENENENENDENDENENENDANDGY 1271 SKIKKOIE TYNEDIKBYKKYLOHLKKNSDKKFIFV 739	SAVOKEVOJDOVI GATIO ANTO TOTO TOTO TOTO TOTO TOTO TOTO TOT
Y 1119 NSYVDEFNECAVSRKKCVPRKSDLGEFPAPDPSVLVQNFNISDFNG 1164 :: : :	1059	Qy 999 SADLRTTGGRSSRPLSAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKLVGVLACAFLIV 1058		Qy 895 VTLFSKLFEGFKELQRDEENFLRELSKEEMDVLDGLKMEATEVEKLFGRALPIRKIMAVA 954 : : ; ; ; ; ; ; ; ; ; ; ; ; ;	Qy 842 GRDFNTFIKTDNTCGPEPPLVERLEKKVEEGERTIIKEV-EEIEEEVEKVRDKE 894	1207 ME	1163 IESNFEERYST-,:FLIESEGAIS	678 KCVPRKSDVGDFPVPDPSVLVQKFDMKDFSGKWFITRGLNPTFDAFDCQLHEFHTEENKL ::::::::::::::::::::::::::::::::::::	1055	1004 NVKFNDINKEINGKYNEVISNYRGYSENISSKLENEIMHEIENLSRRLTDR	QFAK-TAIVAIFILSV : : : DIASFQANIDITLDSL	519 IC 890 LL	QY 476 LAPHSNFLANHETIKYYVGSKLPGHKRFSWGWEDYFGSIVVAK 518	Qy 428 KELQQDEENFVRELSKEEKEILNELQMEATE-VEKLFGRALPIRKLRMA 475 : :: :: :: : Db 790DDKNNFVISKIEECDYKLKDFKIESEDILNNFKSDLNEFIES	Qy 385KTAEEGEKLLIKEAVEIEEEVEKEVEKVRDTEMTLFQRLLEGF 427	Qy 335SVIYTRSFILPESIIPNLQKAAKSVGRDENNFITTDNSCGPEPPLVERLE 385	041OKKAIDMHGS 686

Оy	Оy	Qy Db	ОУ	Qy	Qy Db	Qu Ma	SSE	RA	R R R R R	888	Bada	RESU 0962 ID AC	밁	Qy	₽ . K	ğ	Qy	B	Qy	Db
617 LLKECRLELAKCISNPACAANVACLQTCNNRPDETECQIKCGDLFENSVDEFNECA 67	558 HSINQNVPKG-NSGCKFPKDVALMVWEKWGGFAKTAIVAIFILSVASKADAVDALKTCTC 6 ;	502 RFSWGWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGKHNLSPA 5	442 SKEEKBILNELQMEATEVEKLFGRALDIRKLRMALADHSNFLANHETIKYYVGSKLDGHK 5	391 EKLLIKBAVEIEEEVEKEVEKVRDTEMTLFORLLEGFKELQQDEENFVREL 44	347 SIIPNIQK-AAKSVGRDENNEITTDNSCGPEPPLVERLEKTAEEG 39 : : ::: ::	Query Match 1.9%; Score 143.5; DB 5; Length 1558; Best Local Similarity 17.9%; Pred. No. 3.5; Matches 206; Conservative 153; Mismatches 377; Indels 413; Gaps	Science 28:1126-1132(1998). Science 28:1126-1132(1998). EMBL; AE001424; AAC71972.1; SEQUENCE 1558 AA; 175658 MW; D49C	SALDBERG S., ZHOU L., SUTTON G.G., CLAYTON R., WHITE O., STRASER C.M., ADAMS M.D., VENTER J.C., HOFFMAN S.L.; "Chromosome" 2 sequence of the human malaria parasite Plasm	(1) SEQUENCE FROM N.A. GARDOER M.J., TETTELIN H., CARUCCI D.J., CUMMINGS L.M., & GARDNER M.J., TETTELIN H., CARUCCI D.J., CUMMINGS L.M., & KOONIN E.V., SHALLOM S., MASON T., YU K., FUJII C., PEDEE KOONIN E.V., SHALLOM C., LAT Z., SCHWARTZ D.C., PETTES SHEN K., JING J., ASTON C., LAT Z., SCHWARTZ D.C.	- 171 1FT 1F	01-MAY 01-MAY 01-MAY RESA-H	SULT 14 6275 096275 096275	1792 EFKKNHKELLKEVDNNILELESKILNCDVQFN	1361 RLAEGFNELKQDEENFVRELSKEEM: :	1757 LGLLEDELKKSLKHSTSEIETIKSGLQEQIDKFEV 17	1/01 EMVDV1SSDRESFEGQ1ELINKN1SEFSEK1SLYRNN1ETS1ENEYNSFSKS1KSD 1/	1255 DYIFVYYRGRNDAWDGYGGAVVYTRSSV	1641 DFKLEKIDEKVNKKTEDILIQAEVKFLTQQKDLEDKIFELNQKLEHEFTTLSSNLDKVRR 17	1212 RSAVQKFVQDPNQPGVLYNHDNEYLHYQDDWYILSSKIENKPE 1	1582 IFNVKIGLESFKDGFEIKAEEIFSNLQNEAKKIEQSVHLDFKNIGE-SLNLKVLDLEKFV 16
73	16 78	57	93	41 39	90	s 50;		•							791	ı v	. 0	700	254	640

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RESULT 15
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SEQUENCE FROM N.A. SEQUENCE FROM N.A. STRAIN-J99;
ALM R.A., LING L. S.L., MOIR D.T., KING B.L., BROWN E.D., DOIG P.C., SMITH D.R., NOONAN B., GUILD B.C., DEJONGE B.L., CARMEL G.,
                                                                                                          CAG ISLAND PROTEIN.
Helicobacter pylori J99.
Bacteria; Protecbacteria; epsilon subdivision; Helicobacter group;
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QALDCIKNAKTEAEKKRCVKDLPKDLQKKVLAKESVRVYLDCVSKAKNEA 994	ALPIRKL	E-ERVENVRUNEVILESKLEEGEREL	ESVKAYKDCVSRARNEKEKOECEKLLTPEARKLLEESKKSVKAYLDCVSKAKNEA 88	QTAAQKVGRDFNTFIKTDNTCGPEPPLVERLEKKVEEGERT	EKQBCEKLLTPEARKLLEES-KKSVKAYLDCVSKAKNEAERKECEKLLTPEARKLLEEA 83	- NHDNEYLLYODDWYII.SSKVENSPEDYTEVVYKGRUDAWDGYGGGVTVTBSAVIDEST 83	FDCQLHEFHTEENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILY 773 **I	NQALDCLKNAKTDEERKECLKDLPKDLQKKVLAKESVRVYLDC 727	SRKKCVPRKSD	: : : : : : : : : : : : :	LLKECIKCGDLFE 662	AKKLLEEEAKESVKAYLDCVSQAKT-EA 62	CKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADAVDALKTCTC 616	RNEKEKQECEKLLTPEAKKLLENQALDCLKNAKTDEERKECU-KNLPKDLQSDILAKES 57	RIPRYFRKSPRICCGLDSRGLQLFSHGKHNLSPAHSINQNVPKGNSG 570		KLPGHKRFSWGWEDYFGSIVVAKICSSR 52	KECLKLINDPEIREKFRKELEQKELQCEYKDCIKNAKTEAEKNECLKGLSKEAIERLK 469	TLEAYNDCIKNAKTEEERIKCUDLIKDENLKKSILNQQKVQVALDCIKNAKTDEER 41	FITTDNSCGPEPPLVERLEKTAEEGEKLLIKEAV	YLNIABIEDKNPLRAFYECISNGGNYBECLKLIKDKKLQDQMK 35	IENKPDDY1FVYYRGRNDAWDGYGGSV1	YNRLLKERNEKGNMIDKNLFFNDDPNRTLYN	СОТНЕЕНМЕ	LFSRSIFHYE	267. Indels 417; Gaps	tch 1.9%; Score 142.5;		Sequence Con Pathogen Heli	<pre>INO P.J., CARUSO A., URIA-NICKELSEN M., MILLS D.M., IVES C., DN R., MERBERG D., MILLS S.D., JIANG Q., TAYLOR D.E., VOVIS G.F., I T.J.;</pre>
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Оу 1391		Db 1	Qy 1	Db 1	Qy 1	Db 1	Qy 1	0у 1	Db 1	Qy 1	Db 1	Qy 1	дb	Qy
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ALIGNMENTS

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ATU44133 1555 bp mRNA PLN 15-JUN-1998
LOCUS
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ACCESSION MRNA, complete cds.

ACCESSION U44133
VERSION U44133

KEYWORDS
SOURCE
ORGANISM
EUKARyota: Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; euphyllophytes; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots: Rosidae; eurosids II; Brassicales; Brassicaceae;

REFERENCE AUTHORS
JOURNAL MEDLINE
REFERENCE 1 (bases 1 to 1555)
AMEDLINE
REFERENCE 5 (Jen; Lified from plants 15324 (1998)

MEDLINE 6 (1988)
Bugos, R.C. and Yamamoto, H.Y.
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Shinn, P., Buehler, E., Dewar, K., Feng, J., Kim, C., Li, Y., Sun, H., Conway, A., Conway, A., Kurtz, D., Oji, O., Shen, Y.K., Toriumi, M., Vysotskaia, V., Yu, G., Davis, R.W., Federspiel, N.A., Theologis, A. and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Submitted (26-JAN-1998) Arabidopsis thaliana Genome Center, Department of Biology, University of Pennsylvania, 38th Str Hamilton Walk, Philadelphia, Pennsylvania 19104-6018, USA 4 (bases 1 to 133840)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Submitted (08-JAN-1998) Arabidopsis thaliana Genome Center, Department of Biology, University of Pennsylvania, 38th Street and Hamilton Walk, Philadelphia, Pennsylvania 19104-6018, USA (bases 1 to 133840)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; euphyllophytes; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae; eurosids II; Brassicales; Brassicaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Department of Biology, University of Pennsylvania, 38: Hamilton Walk, Philadelphia, Pennsylvania 19104-6018,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Submitted (18-APR-1998) Arabidopsis thaliana Genome Center
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Direct Submission
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Genomic sequence for Arabidopsis thaliana BAC F22013
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ecker, J.R.
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                                                                                                                                                                                                                                                                                                                                                                  join(1384. .1462,2003. .2184,2418. .3014,3460. .3690,
3802. .3942,4029. .4229,4332. .4619)
/note="putative plastid RNA polymerase sigma-subunit;
similar to EST gb|N65838"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1998 this sequence version replaced gi:2809231.
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of Arabidopsis F22013, complete sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               .318,504. .604,730. .875)
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6797. .731
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NSIIPELEKAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGERIIVKEVEEIEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /gvidence=not_experimental
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GTREKQVIRWRFGMEDGRMKTLQEIGEMMGVSRERVRQIESSAFRKLKNKKRNNHLQQ
?LVAQS"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SSAQELVDSLTNAGDKLVVVDEFSSPGCGGCKALHEKICOFAEMNPDVQFLQVNYEEHK
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complement(join(13219 ...13280,13397 ...13477,13866 ...13932,
[4113 ...14274))
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       join(10982. .11218,11470. .11646,11732. .11896,11987. .12235)
/note="putative thioredoxin; similar to ESTs gb|T46281,
cb|R83933, gb|N65879, emb|F14466, gb|N96726, gb|AA042340,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LSSFLEEAEYVKAEMGLISETLARIEQYHEESKGVHKAESVKSLRNKISNEIVSGLRK
AKSIKSKLEEMDKANKEIKRLSGTPVYRSRTAVTNGLRKKLKEVMMEFOGLROKMMSE
YKETYBERYYTYTGEHANDEMIEKIITDNAGGEEFLTRAIQEHGKGKVLETVVEIQDR
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IKCGDLFENSVVDEFNECAVSRKKCVPRKSDLGEFPAPDPSVLVQNFNISDFNGKWYI
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F22013 has a deletion of a cytosine at position 7887"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EVEKEVEKVGRTEMTLFQRLAEGFNELKQDEENFVRELSKEEMEFLDEIKMEASEVEK
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        YDAAKEIEKSLLELHQVFLDMAVMVESQGEQMDEIEHHVINASHYVADGANELKTAKS
HQRNSRKWMCIGIIVLLLIILIVVIPIITSFSSS"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LFGKALPIRKVR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /note="putative violaxanthin de-epoxidase precursor
(U44133); similar to EST gb|N37612"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /codon_start=1
                                                                                                                                                                                                                                                                16782.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /note="hypothetical protein"
/protein_id="AAC14033.1"
/db_xref="PID:g3063445"
                                                                  /product="F22013
                                                                                                            /evidence=not_experimental
                                                                                                                                                                                                                     'note="similar to receptor-like protein kinase (Ipomoea
                                                                                                                                               "codon_start=1
                                                                                                                                                                                      (U77888)"
                                                                                                                                                                                                                                                                    .19871
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SKQWASVYLASTPHQAAAMGLEFPGVNEVIFSIMPLYFLTVLMLMMICICLHLLIFVA
PRKKALNVTSPFLDRLLAVRHLKKACVEEIEEIDASLADPFLADAIDNERELALTEEQ
KTNYIRISGIKASTFEIITESGCSLCSCFCGVGSKSIMKYHLRLLTTPALPFMSFSM
                                                                                                                                                                                                                                                                                 QALKQVKCQRRIALTGSPLQNNLMEYYCMVDFVREGFLGSSPEFRNRQSFNCGSPYLQ
LPKSNRKRTAYEFNCGGCFVQRMDMNVVKKDLPPKTVFVISVKLSPLQRILYQRFLEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SDSSSDSSSDNNSVDTDADVNVTISSKKKSKKIRRIIDDAELGKDTRTKIAIEKARQ
ERLRSLQFSARYKTISSMGDVKSIPEGAEVEVLGDAHSGYIVNVVREIGEEAVRVPRS
ISAKLKVHQVTGIRFMMENIIQSISRVKSGDKGLGCILAHTMGLGKTFQVIAFLYTAM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TLNHLOVKEBDDITODRVLOLIRLKRKRRKKRSKOVIRCAAENMDDDSVYLDGNNTTPN
FAKDQVKSPETSTQVHNSEVNIEBINGNESNISDVDKMTTBSTHILVDAKRDDSQNBANNF
RCTAKONKVAVUVHSHPLLEVIYCMDCKRSIEDBRVSKVDDSLEBRICEWGRHJADLIDG
RCTAKONKVAVUVHSHPLLEVIYCMDCKRSIEDBRVSKVDDSLEBRICEWGRHJADLIDG
TCEKLFCASCIKRNIGEEYMSEAQSSGWDCCCCSPIPLQRLTLELEKAMRDKKSIELS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /translation="MEANEESLKGKIEKLEGKEVIVESKEDEMDIIIEENKEAEGEVM
EVKAADGRGEONDVLKEENNNQGEQKDEEMQDASSRSESSDFNSDEDEQILSRRDDEL
DLEVCIDDISCLLGGGIVYVYLIFLFSIIGQKFNSEEEIDELISDLAVESKAAEAGE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LGVVLLELVTGKMPIDPSFEDSIDVVEWIRRKVKKNESLEEVIDASIAGDCKHVEEM
LLALKIALLCTAKLFKDRPSIRDVITMLAEAKPRKSVCQVAGDLPIFRNSPVGLI"
join(22485 . .22946,23045 . .23140,2323 . .23315,23426 . .23616,
23701 . .24112,24456 . .24569,24699 . .24956,23371 . .25724,
26173 . .254856,26582 . .26672,26778 . .26987,27139 . .27288,
27398 . .27554,272925 . .28066,2825 . .26987,2739 . .28618,
28675 . .28756,28806 . .29002,29146 . .29275,29686 . .29741,
29856 . .30082,30163 . .30366,30450 . .30528,30616 . .30875,
27077 . .37544, .37544 . .25754,270275 . .26987,2714 . .29275,29686 . .29741,
20857 . .30082,30163 . .30366,30450 . .30528,30616 . .30875,
27077 . .37544 . .37544 . .29275 . .20868 . .29741,
20877 . .37544 . .37544 . .29275 . .20868 . .29741,
20877 . .37544 . .37544 . .29275 . .20868 . .29741,
20877 . .37544 . .37544 . .29275 . .208875 . .20875 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .208775 . .2
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SKIAELPNLEVLELWONSLMGSLPVHLGKNSPLKWLDVSSNKLSGDIPSGLCYSRNLI
KLILFNNSFSGQIPEEIFSCPTLVRVRIQKNIISGSIPSGSGDLPMLGHLELAKNNLI
KLILFNNSFSGQIPEEIFSCPTLVRVRIQKNIISGSIPSGSGDLPMLGHLELAKNNLI
GXIPDDLALSTSLSFIDISFNHLSSLSSSIFSSPNLOTFIASHNNPAGKIPNOIQDR
PSLSVLDLSFNHESGGIPERIASFEKLVSLNLKSNOLVGEIPKALAGMHMLAVLDLSNN
SLTGNIPADLGASPILEMLNVSFNKLDGFIPSNMLFAAIDPKDLYGNNGLCGGVLPPC
SKSLALSAKGRNPGRIHVNHAVFGFITGTSVTVYAMGNMFLAGGMIYTRMDLYSNFARE
YIFCKKPREEWPWRLVAFQRLCFTAGDILSHIKESNIIGMGALGIVYKAEVMRRPLLT
VAVKKLWRSDSPONDIEDHHOEDEDEDDILREVNLLGGLRHRNIVKIIGYVHNEREYM
VAVKKLWRSDSPONDIEDHHOEDEDEDDILREVNLLGGLRHRNIVKIIGYVHNEREYM
                                                                                                                                                                                                           YGFSDGRTDERMRKNFFAAYQVLAQILNHPGIPQLRSEDSKNGRRGSIVDIPDDCSSD
                                                                                                                                                                                                                                                                                                                                                                                                                             RCVDLGLKTALIVTPVNVLHNWRSEFEKWMPSEVKPLRIFMLGDVSRERRFDLLTKWR
KKGGVFLMGYTNFRNLSLGRGVKDLNAARGICNALRDGPDILVCDEAHIIKNTKADTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                {\tt RPVRKRHGKLLEEGASGFLEKKLADGAVKESLAGTSELDWSSLNKVFSEKRDESVSFG}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ALEKESLSKVESEVREELAQALRGDELDEAVAAEMMTFKDEWEATLDELETESATLLE
QLDGAGIELPKLYEMIESQAPNGCYTEAWKQRAHWVGTQVTKETVESLANAERFLHTH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LQALDLSNNAFESSLPKSLSNLTSLKVIDVSVNSFFGTFPYGLGMATGLTHVNASSNN
FSGFUPEDLGNATTLEVLDFRGGYFEGSVPSSFKNLKNLKFLGLSGNNFGGKVPKVIG
ELSSLETIILGYNGFMGEIPEEFGKLIRLQYLDLAVGNLTGQIPSSLGQLKQLTTVYL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /note="similar to DNA dependent ATPase and helicase (U72937)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MVYEYMPNGNLGTALHSKDEKFLLRDWLSRYNVAVGVVOGLNYLHNDCYPPIIHRDIK
SNNILLDSNLEARIADFGLAKMMLHKNETVSMVAGSYGYIAPEYGYTLKIDEKSDIYS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /evidence=not_experimental
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SNNLQDWKRPENATTFSELVHCHWTGVHCDANGYVAKLLLSNMNLSGNVSDQIQSFPS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /db_xref="GI:3063446"
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61.6%;
73.8%;
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CDS

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                                                                                                                                                                                                                                                                                           6362
                                                                                                                                                                                                                                                                                                                                                                                                                             6242 AGAGATATTGCTTGCTTATGAAAGAAGACCAATGATTTTGTTTATAATTATGTGCTTATA 630:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  6182 CCGTCCAGATGAAACCGAGTGCCAGGTTATAATTTATTTTGATATATCATTTTATGAGGC 6241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        6122 AAAGTGCATTGCCAACCCTGCCTGTGCAGCCAATGTCGCGTGCCTTCAGACCTGCAATAA 6181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           6062 TATATTTCCCTCCTTGTCTGACCATATGGAAGCCCAATTATCTGTTAGGATAGAACTCGC 6121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               6002 GTCTATGATAGAGCTGAAATCAGTTGATGATATCTTTCTGATTTTTTTGCCGTCAATTTA 6061
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    5942 GTATAGCTCCATACTCTTCAATTGTTGAGAATGTTAAAGCTAGATGAAGTTACTGTGTCT 600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       5882 CCCCCCACCAAAACCGGTTTTATTTTCATTGTGATTGTGATGCTATAAGTGTTTTGAATT 5941
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         5762
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            440 aaagtgcattgccaaccctgcctgtgcagccaatgtcgcgtgccttcagacctgcaataa 499
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                5702
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           5642 GTATTTCGATGATCTCATTGCTTTTGATCATGTCAGGGGATATTTGACATTGTGCCATTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    5522 AATCCAAAGTGCTGATCTCAGAACAACTGGTGGGAGATCCTCACGTCCTTTATCTGCATT 5581
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        522 -----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   500 ccgtccagatgaaaccgagtgc-----
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acagaaggtgacaacaagcttgttggaaacatctctttggagaataaagaccctagacagt 815
                                                                                                                                                                 attacaagtggcttgaatccaacctttgatgccttcgactgccagctgcatgagttccac
                                                                                                                                                                                                                                  ccagacccttctgttcttgtacagaacttcaacatctcggactttaacgggaagtggtac
                                                                                                                                                                                                                 CCAGACCCTTCTGTTCTTGTACAGAACTTCAACATCTCGGACTTTAACGGGAAGTGGTAC
                                                                                                                                                                                                                                                                                                                                                            TTATATCAGATTAAATGTGGGGATCTGTTTGAGAACAGTGTTGTTGATGAGTTCAACGAG
                                                                        ACAGAAGGTGACAACAAGCTTGTTGGAAACATCTCTTGGAGAATAAAGACCCTAGACAGT
                                                                                                                                           ATTACAAGTGGCTTGAATCCAACCTTTGATGCCTTCGACTGCCAGCTGCATGAGTTCCAC
                                                                                                                                                                                                                                                                                      TGTGCTGTCGAGAAAAAAGTGTGTTCCTAGAAAATCTGATCTCGGAGAATTTCCTGCC
                                                                                                                                                                                                                                                                                                            tgtgctgtgtcgagaaaaagtgtgttcctagaaaatctgatctcggagaaatttcctgcc
                                                                                                                                                                                                                                                                                                                                                                             ttagcttgcgcgttccttattgttccatctgcagatgcagttgatgcacttaaaacttgt 404
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GCATGCTTATTGAAGGGATGCAGGTAACTTTCCTTCGTTTGGATTCTGCATATATAGTGT 5881
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                gcatgcttattgaagggatgc-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TTAGCTTGCGCGTTCCTTATTGTTCCATCTGCAGATGCAGTTGATGCACTTAAAACTTGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CCATCAAAGAATGAGCTGAAAGAGCTGACCGCTCCGCTGTTGCTAAAACTCGTGGGTGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ccatcaaagaatgagctgaaagagctgaccgctccgctgttgctaaaactcgtgggtgtt 344
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CAGGTCAGGATTCTCTAAGGTAATCAATCATACTAGTCTTGTGTTTTCAATACAAAATTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              -aggggatatttgacattgtgccatta
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   6661
                                                                      6601
                                                                                                                                            6541
                                                                                                                                                                              755
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182 aatccaaagtgctgatctcagaacaactggtgggagatcctcacgtcctttatctgcatt

TAGGCTTGGCATTACAAGAAAGAGGATCAATGGCACTTTCTTGCTCAAGATTTTACCTCC taggcttggcaftacaagaagaggatcaafggcacfftcttgcfcaagaffffacctcc TTGTTTCACTTCACCTTGTCATGACCGTATTCGATTTTTCTCAAGTGATGATGGTATTGG

QΥ g ρy В

5402

62

δÃ

2 cacgcgtccggcttggtgtggggaagattagatagtgtgaagaatggcagtagctacaca 61

CTCAGGTATTGCTTGGTGTGGGGAAGATTAGATAGTGTGAAGAATGGCAGTAGCTACACA 5401

ttgtttcacttcaccttgtcatgaccgtattcgatttttctcaagtgatgatggtattgg 121

5461

5521 181 5342

Matches 1541;

Conservative

0,

10;

Gaps

4;

Score 958; DB 8; Pred. No. 2.1e-216; Mismatches

Length 133840; Indels 537;

Local Similarity

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U39452.1
                                                                                                      Eukaryota: Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; euphyllophytes; Spermatophyta; Magnollophyta; eudicotyledons; core eudicots; Rosidae; eurosids II; Brassicales; Brassicaceae;
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                                  Lukowitz,W., Mayer,U. and Jurgens,G.
Cytokinesis in the Arabidopsis embryo involves
KNOLLE gene product
Cell 84 (1), 61–71 (1996)
                                                                                         Arabidopsis
                                                                      (bases 1 to 2596)
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atactaccgtgggcgaaacgatgcttgggatggatatggtggtgcagttgtatacacgag
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                                                                                                                                      CACGAGGGAGAGTCTTGATAGTGCTGCTATTCTTTGGCCTAACAAGCTTTCATATGA
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YDAAKEIEKSLLELHQVFLDMAVMVESQGEQMDEIEHHVINASHYVADGANELKTAKS
HQRNSKKMMCIGIIVLLLIILIVVIPIITSESSS"
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/db_xref="9ID:91184167"
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/translation="MNDLMTKSFMSYYDLKKAAMKDMEAGPDFDLEMASTKADKMDEN
/translation="MNDLMTKSFMSYYDLKKAAMKDMEAGPDFDLEMASTKADKMDEN
LSSFLEEAEYYKAEMGLISETLARIEQYHEESKGVHKAESVKSLRNKISNEIVSGLRK
LSSFLEEAEYYKAEMGLISETLARIEQYHEESKGVHKAESVKSLRNKISNEIVSGLRK
AKSIKSKLEEMDKANKEIKRLSGTPYYRSRTAVTNGLRKKLKEVMMEEOGLRCKMMSE
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                                                                                                         96822, USA
                                                                                                                  Submitted (25-AUG-1995) Robert C. Physiology, University of Hawaii,
                                                                                                                                                    Direct Submission
                                                                                                                                                                2 (bases 1 to 1589)
Bugos, R.C. and Yamamoto, H.Y.
                                                                                                                                                                                                                        Bugos.R.C., Hieber,A.D. and Yamamoto,H.Y. Xanthophyll cycle enzymes are members of the lipocalin first identified from plants
                                                                                                                                                                                                                                                                                        Nicotiana tabacum
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
euphyllophytes; Spermatophyta; Magnoliophyta; eudicotyledons; core
eudicots; Asteridae; euasterids I; Solanales; Solanaceae;
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                                                                                                                                                                                                                                                                                                                                                                    common tobacco
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                                                                                                                                                                                                                                                                           (bases 1 to 1589)
                                                                                                                                                                                                             . Chem. 273 (25),
            /organism="Nicotiana tabacum"
/strain="Xanthi"
/db_xref="taxon:4097"
/tissue_type="leaf"
                                                                                          Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                   GI:1463122
                                                                                                                                                                                                             15321-15324 (1998)
                                                                                                               Bugos, Plant Molecular
3190 Maile Way, Honolulu,
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                                                                                                     TCTACCAAGATGACTGGTATATTTTGTCATCCAAAGTAGAAAATAGTCCAGAGGATTACA
                                                                                                                                      actatcaagatgactggtatatcctgtcatcaaagatagagaataaacctgaagactata 963
                                                                                                                                                                                                                                         aattcgtgcaagatcctaaccaacctggtgttctctacaatcatgacaacgagtaccttc
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DVALMYWEKWGQFAKTAIVAIFILSVASKADAVDALKTCTCLLKECRLELAKCISNPA
CAANVACLQTCNNRPDETECQIKCGDLFENSVVDEFNBCAVSRKKCVPRKSDVGDFPV
CDPSVLJQKFDMKDFSGKWFITRGLNPFFDAPFDQLHEFHTEENKLVGNLSWRIRTFD
GGFFTRSAVQKFVQDFXYPGILYNHDMEYLLYQDDWYILSSKVENSPEDYIFVYYKGR
NDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDFNTFIKTDNTCGPEPPLYERL
EKKVEEGERTIIKEVEEIEEEVEKVBDKEVTLFSKLFEGFKELQRDEENFLRELSKEE
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/product="violaxanthin de-epoxidase precursor"
/protein_id="AAC50031.1"
/db_xref="PID:g1463123"
/db_xref="GI:1463123"
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U31462.1
                                                                                                                                                                                                                                                                                                                                                                   eudicots; Asteridae; euasterids II; Asterales; Asteraceae; I (bases 1 to 1760)
Bugos,R.C. and Yamamoto,H.Y.
Molecular cloning of violaxanthin de-epoxidase from romaine and expression in Escherichia coli
Proc. Natl. Acad. Sci. U.S.A. 93 (13), 6320-6325 (1996)
                                                                                                                                                                                                                                                            Submitted (12-JUL-1995) Plant Molecular Physiology, University Hawaii, 3190 Maile Way, Honolulu, HI 96822, USA
                                                                                                                                                                                                                                                                                                                  Bugos, R.C
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                                                                                                                                               /strain="Romaine"
/db_xref="taxon:4236"
235. .609
                                                                                                            /gene="VDE1"
235. .1656
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235. .1656
'gene="VDE1"
'gene="VDE1"
'codon_start=1
'product="violaxanthin de-epoxidase precursor"
'protein_id="AAC49373.1"
'db_xref="FDI.91438875"
'db_xref="GI:1438875"
                                                                                                                                                                                                     /organism="Lactuca sativa"
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                                        cccaatagcattataccagaactcgaaaaagcagcaaaaagcataggcagagacttcagc 1103
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CCCGAATCGATCATCCCAAACCTACAAAAAGCAGCCAAATCCGTGGGTCGAGACTTTAAC
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OTFVODPDLPGALYNHDNEFLHYODDWYILSSOIENKPDDYIFVYYRGRNDAWDGYGG
SVIYTRSPTLPESIIPNLOKAAKSVGROFNNFITDNSCGPEPPLVERLEKTAEEGEK
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SNNGYENSFRLFTSYKTSSESSSHCKOKSOICSIDEELIGREDLKRGMTLILEKO
FROHTOLAIVLCTFVYLVPRVDAVDALKTCACLLKECKIELAKCIANPSCAANVACLO
TCNNRPDETECQIKCGDLFENSYVDOFNECAVSRKKCVPRKSDVGEFPVPDRNAVVON
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1344 gagatggagtttttggatgagatcaaaatggaagcaagtgaggttgaaaaattgtttggg
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                                                                                                                                                                Submitted (20-MAY-1999) Arabidopsis thaliana Genome Center, Department of Biology, University of Pennsylvania, 38th St. Hamilton Walk, Philadelphia, Pennsylvania 19104-6018, USA
                                                                                                                                                                                                                                                                                            Submitted (02-MAR-1999) Arabidopsis thaliana Genome Center, Department of Biology, University of Pennsylvania, 38th Street and Hammilton Walk, Philadelphia, Pennsylvania 19104-6018, USA 3 (bases 1 to 89493)
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                                                                                                                                                                                                                                                     Direct Submission
                                                                                                                                                                                                                                                                      Ecker, J.R.
                                                                                                                                                                                                                                                                                                                                                                                        Direct Submission
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                /organism="Arabidopsis thaliana"
/db_xref="taxon:3702"
/chromosome="1"
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BAC T27G7 from chromosome
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Best Local Similarity 83.5%;
1116 acggataacacatgtggtcctgaacctgcgctcgtggagagaattgagaagacagtggaa 1175
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166494
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Dorner, F.; Scheiflinger, F. and Falkner, F. Gunter.
Recombinant fowlpox virus
Patent: US, 5670367-A 14 23-SEP-1997;
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166494.1 GI:2724471
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Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
euphyllophytes; Spermatophyta; Magnollophyta; eudicotyledons;
Rosidae; Myrtales; Onagraceae; Oenothera.
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In-frame length mutations associated with short tandem repeats are located in unassigned open reading frames of Oenothera chloroplast
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              /translation="EFESTILOPSVPDLVALINEALSISITOKKSIIDTTTIRVALHR
/translation="EFESTILOPSVPDLVALINEALSISITOKKSIIDTTTIRVALHR
KTWDLEADRNLSPAKEHGTLFYQVGRAFAHTVLLRNCSIDFISYTKKNLCENGDSSL
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GLSDIVHGLLELLGALVGSSPTEEEVBGTEEEVFGTEEEVEGTEEEVEGTEEEVEGT
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                                                                                                                                                                                                                                                                                                                                                                                              /gene="ORF2280"
<1. .2166
                                                                                                                                                                                                                                                  /codon_start=1
/protein_id="CaA45898.1"
/db_xref="pID:g14335"
/db_xref="GI:14335"
/db_xref="SWISS-PROT:p31568"
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                                                                                                                                                                                                        complete sequence.
  Isomura, M., Ikegawa, S., Kinjo, T. and Nakamura, Y
                                       Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Eutheria; Primates; Catarrhini; Hominidae; Homo.
                                                                                  Homo sapieus
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/gene="ORF80"
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/translation="VETPVSSIFWILAPRNNMLLLKDGRIEILDQNIMYGWYELPKQE
%LNSVRTIQIFTKKYCIPFRIGPERRRKAGMPTGV"
2423. .2704
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/protein_id="CAA45899.1"
/db_xref="PID:e45336"

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/db_xref="GI:1334368"
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hes 146; Conser
              Homo sapiens
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HTG: HTGS_PHASE1
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Submitted (12-FEB-1999) to the DDBJ/EMBL/GenBank databases. Mika Hirakawa, Japan Science and Technology Corporation (JST), Advance Database Department; 5-3, Yonban-cho, Chiyoda-ku, Tokyo 102-0028, Japan (E-mail:mika@tokyo.jst.go.jp, Tel:81-3-5214-8491, Fax:81-3-5214-8470)
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The sequence is submitted by:Human Genome Sequencing
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        project of JST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Principal Investigator: Yusuke Nakamura Ph.D Phone: +81-3-5449-5372, Fax: +81-3-5449-5433,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          This sequence is conducted by Japanese Foundation for Cancer Research as a JST sequencing Team.
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/note="1264/895;The location is between each flanking site
of PCR primers."
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/db_xref="taxon:9606"
/chromosome="8"
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Length 200000;

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Direct Submission

Submitted (08-MAY-1998) Department of Genetics, Stanford H Genome Center, 855 California Avenue, Palo Alto, CA 94304, On Jan 19, 1999 this sequence version replaced gi:3128159

* NOTE: This is a 'working draft' sequence. It currently consists of 21 contigs. The true order of the pieces is not known and their order in this sequence record is
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Stone, N.E.,
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              /db_xref="taxon:9606"
/chromosome="4"
                                         /organism="Homo sapiens"
                                                                    Location,
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102749 contig of 15238 bp in length
104388 gap of unknown length
117449 contig of 13061 bp in length
119088 gap of unknown length
143702 contig of 24614 bp in length
143701 gap of unknown length
170412 contig of 25071 bp in length
172051 gap of unknown length
200000 contig of 27949 bp in length
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                                                                                                                                                                                                                                                                                                                                                                                                             submitted (15-OCT-1998) Whitehead Institute/MIT Center for Genome Research, 320 Charles Street, Cambridge, MA 02141, USA (bases i to 169931)
Birren,B., Linton,L., Nusbaum,C., Lander,E., Allen,N., Anderson,M., Baker,J., Baldwin,J., Barna,N., Beckerly,R., Benn,J., Boutwell,C., Brown,A., Castle,A., Cerny,J., Colangelo,M., Collins,S., Collymore,A., Cooke,P., Corliss,D., Depayre,E., Devon,K., Dewar,K., Donelan,L., Ferreira,P., FitzHugh,W., Forrest,C., Fusher,R., Cocker, FitzHugh,W., Forrest,C., Busher,R., Cocker,R., Cocker, FitzHugh,W., Forrest,C., Busher,R., Cocker,R., Cocker, FitzHugh,W., Forrest,C., Busher,R., Cocker,R., 
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Eutheria; Primates; Catarrhini; Hominidae; Homo.
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Birren,B, Linton,L., Nusbaum,C. and Lander,E.
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                                                                  Gage,D., Gardyna,S., Geraigery,K., Grant,G., Hagos,B., Heaford,A., Herena,L., Horton,L., Howland,J.C., Jacotot,L., Jones,C., Kann,L., Karatas,A., LehoczkyJ., Macdonald,P., Marquis,N., McEwan,P., McGurk,A., McKernan,K., Meldrim,J., Molla,M., Morris,W., Morrow,J., Mychaleckyj,J., Nahf,R., Naylor,J., Niloff,M., O'Connor,T., O'Donnell,P., Pavlin,B., Peterson,K., Riley,R., Roberts,D., Roy,A., Severy,P., Stange-Thomann,N., Stilwell,J., Stojanovic,N., Stone,C., Subramanian,A., Tesfaye,S., Tichovolsky,N., Torruella-Miller,I.,
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Vassiliev,H., Vo,A., Wagner,A., Wheeler,J., Wu,Y., Wyman,D., Ye,W.J., Zhao,J. and Zody,M.
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Submitted (31-0CT-1998) Whitehead Institute/MIT Center for Genome Research, 320 Charles Street, Cambridge, MA 02141, USA on Oct 31, 1998 this sequence version replaced gi:3810669.
All repeats were identified using RepeatMasker: Smit, A.F.A. & Green, P. (1996-1997)
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/clone_lib="RPCI-11 human BAC library"
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                                                                                                                                                                                                                                                                                                               complement(7895
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  rpt_family="purine-rich"
                                                                                                                                                                                                                      rpt_family="MER91A"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             rpt_family="LTR33"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        rpt_fami
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             rpt_family="Charliel"
                                                                                                                                                                                                                                                                                                                                                       rpt_family="11M3e"
                                                                                                                                                                                                                                                                                                                                                                                                                                   rpt_family="MLT1A1"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        _family="AluJo"
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lement(199)
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                             /rpt_family="Alusx"
37861 . 37925
/rpt_family="038035. .38056
                                                                            /rpt_family="MLT1A1"
complement(31817. .31885)
/rpt_family="(CA)n"
complement(33652. .33918)
                                                                                                                                                                                                                                          /rpt_family="Alusc"
30522. .30559
                                                                                                                                                                                                                                                                                  /rpt_family="L2"
30241. .30521
                                                                                                                                                                                                                                                                                                                                                              complement(28183
                                                                                                                                                                                                                                                                                                                                                                                                                                               /rpt_family="MER1A"
26535. .26840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               complement(24361.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         complement(23370
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      complement(23223. .23369)
/rpt_family="Aluya8"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                complement(22918. .23222)
/rpt_family="Aluy"
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/rpt_family="MLT2FB"
complement(22754. .22917)
                                                                                                                                                                           rpt_family="AT_rich"
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complement/2/20"
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complement/oorr
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complement(21454...21752)
/rpt_family="MLT2FB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /rpt_family="L1MB4"
complement(19315. .19336)
/rpt_family="(CA)n"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /rpt_family="AluJo/FRAM" 14237. . . 14806
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17181. .17594
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             complement(13346. .13492)
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/rpt_family="Charliel"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           rpt_family="Alux"
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17914. .18278
                                                                                                                                                                                                                                                                                                                        t_family="L1M3e"
'4. .30000
                                                                                                                                                                                                                       _fami
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                _family="GC_rich"
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). .2200=
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5. .22563
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                                                                                                                                                                                                      .31165
                                                                                                                                                              .31780
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          Matches 132; Conservative
                    Query Match 3.4%; Score 52.8; DB 34; Length 153053; Best Local Similarity 53.7%; Pred. No. 0.011;
                                                                                                                                                                                                                                                                                                                                                                                                                                   JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                     TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ORGANISM
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1269 ttccagagattggctgaaggatttaatgaactgaagcaagacgaggagaatttcgtgaga 1328
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                                                                                                                                                                                                                                                                                           HTGS_phasel: Unordered fragments separated by 800 N nucleotides.

* NOTE: This is a 'working draft' sequence.

* This record will be updated with the finished sequence

* as soon as it is available and the accession number will

* be preserved.
                                                                                                                                                                                                                                                                                                                                                                                     Submitted (17-JUL-1998) Steffen Hennig, MPIMG, Abt. Lehrach, Max Planck Institut fuer Molekulare Genetik, Ihnestrasse 73, Berlin, 14195, Germany
                                                                                                                                                                                                                                                                                                                                                                                                                                                         Eukaryota; Metazoa; Chordata; Vertebrata; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.

1 (bases 1 to 153053)

Radelof,U., Hennig,S., Ramser,J., Francis,F., Steffens,C., Klein,M., Seranski,P., Poustka,A., Reinhard,R. and Lehrach,H.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          HSAJ9612 153053 bp DNA HTG 11-NOV-1998 HOMO SAPIENS CHROMOSOME 17 clone PAC 1577 map pl1, WORKING DRAFT SEQUENCE, in unordered pieces.
                                                                                                                                                                                                                                                                                                                                                                                                                                               Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        HSAJ9612
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      HTG; HTGS_PHASE1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ĀJ009612.1 GI:3581972
                                                                                                              /clone="PAC 1577"

/map="pl1"

/note="region between markers D17871-D17858"

38825 a: 34160 c 33964 g 39097 t 7007 others
                                                                                                                                                                                                /db_xref="taxon:9606"
/chromosome="17"
                                                                                                                                                                                                                                    /organism="Homo sapiens"
                                                                                                                                                                                                                                                                          Location/Qualifiers
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38108. .38132
/rpt_family="GC_rich"
38296. .38331
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53.7%;
      0; Mismatches
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sautter,A., Biel,M. and Hofmann,F.
Molecular cloning of cyclic nucleotide-gated cation channel subunits from pineal gland
Mol. Brain Res. 47, 171-175 (1997)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Direct Submission
Submitted (17-UUL-1997) Sautter A., Institut f. Pharmakologie u.
Toxikologie, Technische Universitaet Muenchen, Biedersteiner Str
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1 (bases 1 to 4238)
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                                          /product="cyclic nucleotide-gated channel beta
/protein_id="CAA04133.1"
/db_xref="pID:e329895"
            VEDTDAEAGPLIPEETIPPPERPPVSPAKSDTLAVPSAATHRKKLPSQDDEAEELKAL
SPAESPVVAWSDPTTPQEADGEDRAASTASQNSAIINDRLQELVKMFKERTEKVKEKL
                                                                                                                                                                                                                                  /db_xref="PID:g2292986"
/db_xref="GI:2292986"
                                                                                                                                                                                                                                                                                                                                                                      /gene="CNG4.1"
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/db_xref="taxon:10116"
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                                                                                                                                                                                                                   /db_xref="SPTREMBL:035788"
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Chong, S. and Piper, A.A.
Methylation sensitive protein binding to an intragenic active
Methylation sensitive protein binding to an intragenic active
X-specific methylated region in the M. robustus Hprt gene
X-specific methylated region, 461-476 (1996)
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Macropus robustus hypoxanthine phosphoribosyltransferase (Hprt)
                                                                                                                                                                                                                                              Submitted (03-JUN-1996) Cell and Molecular Biology, University of Technology, Sydney, Westbourne, Sydney, NSW 2065, Australia
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                                                                                                                                                                                                                                                                                     Chong, S. and Pipe:
Direct Submission
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ELMVOJ.PDKMRLDIALDVNYNITYSKVALFOGCDROMIFDMLKRLRSVVVLPNDYVCKK
GEIGREMYITQAGQVOVLUGGPDGKAVLUTLKAGSGVFGEISLLAVGGGNRFTANVVAHG
ETNLFILDKKDLNEILVHYPESQKLLLRKKARRMLRNNNKPKEEKSVLILPPRAGTPKL
FNAALAAAGKMGPRGAKGGKLAHLRAKLKELAALEAAARQQOLLEQAKSSQEAGGEEG
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LLDITVROMRLOFVKGGDIITOKKEMRNNYLKSQREKMDLLCLLPLDELYLKLGVNPL
LRLPRCLKYMAFFEFUNKLEATLSKAVYYRV LRTTAYLLYSLHLUSCLYYWASAFOGI
GSTHWVYDGVGNSYIRCYYWAVKTLITIGGLPDPQTLFEIVFQLLNYFTGVFAFSYMI
                                                                                                                                                                                                                                                                                                      and Piper, A.A.
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                 /number=3
a 198 c
                                                                           /gene="Hprt" <1. .>1228
                                                        /gene="Hprt"
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Malek, S.N. and Desiderio, S.
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Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
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/PIOGUCT-"CYClin-dependent protein kinase"
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//Diocutt-"Cyclin-dependent protein kinase"
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                             HDLKSLMETMKQPFLPGEVKTLMIQLLSGVKHLHDNWILHRDLKTSNLLLSHAGILKV
GDFGLAREYGSPLKAYTPVVVTLWYRAPELLLGAKEYSTAVDMWSVGCIFGELLTQKP
{	t LFPGKSDIDQINKIFKDLGTPSEKIWPGYNDLPAVKKMTFSEYPYNNLRKRFGALLSD}
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/cell_line="A20"
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Best Local Similarity 54.6%;
                        1311 gagga 1315
                                                1643 AACTOTGAGGAGGCCTCTGAACAGTCCGCAGAAGAAGTCAGTGATGAGGAAATGAGTGAA 1702
                                                                                                       1131 ggtcctgaacctgcgctcgtggagagaattgagaagacagtggaagaaggtgaaagggata 1190
1703 GATGA 1707
                                                                    1251 aggactgagatyaccttgttccagagattggctgaaggatttaatgaactgaagcaagac 1310
                                                                                                                           923 a
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PRPPEGGLGYSQLGDDDLKETGFHLTTINQGASAAGPGFSLKF"
a 711 c 945 g 582 t
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Search completed: October 14, 1999, 04:04:20 Job time: 4558 sec

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Q55750
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Continuation (8 of
HSV-2 strain SB5 C
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Rat YT521 gene. Br
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                                                                    Gene from the ALS SURA-C3 (F
                                                                                                            Simple tandem repe
                                                                                                                      Rianodin receptor
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Mouse poly Ig rece
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Best Local Similarity
Matches 1554; Conserv
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Arabidopsis viol-xanthin de-epoxidase cDNA.
Violaxanthin de-cpoxidase; VDE: light; photosensitivity;
photoprotection; transgenic plant; zeaxanthin; antheraxanthin;
xanthophyll; lettuce; ss.
Arabidopsis thaliana cv. columbia.
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07-NOV-1996; U18291.
07-NOV-1995; US-006315.
06-AUG-1996; US-023502.
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                                  241 tcaggtcaggattctctaaggggatatttgacattgtgccattaccatcaaagaatgagc
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241 TCAGGTCAGGATTCTCTAAGGGGATATTTGACATTGTGCCATTACCATCAAAGAATGAGC
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                                                                                                              TGACCTTGTTCCAGAGATTGGCTGAAGGATTTAATGAACTGAAGCAAGACGAGGAGAATT
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DAR encoding plant violaxanthin de-epoxidase - used to modify the provided of a plant to light subscious plant to light and clone (T66242) codes for tobacco violaxanthin de-epoxidation of (VDE) (W09875), an enzyme that catalyses the de-epoxidation of violaxanthin to zeaxanthin and antheraxanthin. VDE nucleic acids (see also T66241, T66243), in sense or antisense orientation, can be used in genetic constructs, pref. also contg. a plastid translocation sequence, to modify VDE levels in plants. Increased levels result in the plant being tolerant of increased light and therefore more productive and/or more resistant to disease. Underexpression of VDE increases photosynthetic efficiency under low light. The photosensitivity of a range of crops, trees and commentals can be modified.
                                                                                                                                                                                                                                                                                                                                                                                                                          Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match . Best Local Similarity
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07-NOV-1995; US-006315.
06-AUG-1996; US-023502.
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xanthophyll; lettuce; ss.
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28-JUL-1997 (first entry)
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WPI; 97-281036/25.
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                                                                                          ttcagacctgcaataaccgtccagatgaaaccgagtgccagattaaatgtgggggatctgt
                                                              TCCAGACTTGCAACAATAGACCTGACGAAACGGAATGTCAGATAAAATGTGGTGATTTGT
                                                                                                                                                                                                                                                                                                    TTGCTTCAAAAGCTGATGCGGTTGATGCTCTCAAGACTTGTACTTGCTTACTGAAAGAGT 483
                                                                                                                                                                                 GCAGGTTAGAGCTTGCGAAGTGCATTTCGAACCCTGCATGTGCAGCTAATGTTGCCTGTC
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444. .1475
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Pred. No. 4.8e-163;
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                                  28-JUL-1997 (first entry)
Romaine lettuce violaxanthin de-epoxidase cDNA.
Violaxanthin de-epoxidase; VDE; light; photoser
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photoprotection; transgenic plant;
xanthophyll; lettuce; ss.
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                                                                                                                                                                                                                                                                                       aggttgaaaaattgtttgggaaagctttgccaatcaggaaggtcaggtagaaacaagaac 1443
                                                                                                                                                                                                                                                                                                                                     tgagagagttaagtaaagaagatgagattgagattgagatcaaaaatggaagcaagtg
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CCCTTGTTGAGAGGTTGGAGAAGAAGTGGAAGAAGGAGAAAGGACGATCATAAAAGAAG
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                                                                                                                                                                                              AACTATCAACATATACTACAT 1511
                                                                                                                                                                                                                                                                AGGTAGAAAAACTTTTTGGGCGTGCTTTACCAATAAGGAAATTAAGGTAAGTATTTTAA
                                                                                                          ВP
                     light; photosensitivity; nt; zeaxanthin; antheraxa
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Best Local .
                                                                                                                                                                                                     Matches
                                                                                                                                                                                                                                                                                                                                             DNA encoding plant violaxanthin de-epoxidase - used to modify the sensitivity of a plant to light Claim 3; Fig 1; 41pp; English.

A CDNA clone (T65241) codes for the 55 kDa violaxanthin de-epoxidase (VDE) (W09874) of romaine lettuce. VDE was purified from romaine lettuce chloroplasis and 2 tryptic peptides were used to develop primers (see also T65244-45), which amplified a partial VDE sequence. The amplified sequence was then used to screen a lettuce CDNA library, and the 1981 bp DNA sequence was identified. VDE nucleic acids (see also T65242-43), in sense or antisense orientation, can be used in genetic constructs, pref. also contg. a plastid translocation sequence, to modify VDE levels in plants.
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                                                                                                                                                                                                                                                                    increased levels result in the plant being tolerant of increased light and therefore more productive and/or more resistant to disease. Underexpression of VDE increases photosynthetic efficiency under low light. The photosensitivity of a range of crops, trees and ornamentals can be modified.

Sequence 1981 3P; 608 A; 337 C; 433 G; 577 T;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (CALJ ) CALGENE INC.
Bugos RC, Rockholm DC,
WPI; 97-281036/25.
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07-NOV-1995; US-006315
06-AUG-1996; US-023502
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15-MAY-1997.
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ccagatgaaacc;agtgccagattaaatgtggggatctgtttgagaacagtgttgttgat
                                                                                                                                                               ttgctaaaactogtgggtgtttttagctttgcgcgttccttattgttccatctgcagatgca
                                         TGTATAGCAAACCCATCTTGTGCGGCAAACGTTGCCTGTCTACAGACTTGCAACAATCGT
                                                                 tgcattgccaaccctgcctgtgcagccaatgtcgcgtgccttcagacctgcaataaccgt
                                                                                           GTTGATGCTCT1 AAAACTTGTGCTTGTTTACTCAAAGAATGCAGGATTGAGCTTGCAAAA
                                                                                                                     gttgatgcacttaaaacttgtgcatgcttattgaagggatgcaggatagaactcgcaaag
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235, .1656
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105. .110
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226. .227
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147. .149
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                                              11-MAR-1998 (first entry)
Human p160 cDNA 160.1.
P160; p62; cytoplasmic; T cell; B cell; development; activation;
                                 modulation; cellular response; cell proliferation; autoimmune disease;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1164
                          p56-lck; ss
                                                                                                                                                 T89345 standard; cDNA; 3901
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Homo sapiens
                                                                                                                                 T89345;
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                                                                                                                                                                                                                                                                                                                                     GAGAAGGAAATTCTGAATGAACTTCAAATGGAAGCGACTGAAGTTGAAAAGCTTTTTGGG
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CATGAGTTTCATATGGAAAATG---ATAAACTTGTTGGGAACTTAACATGGCGCATAAAA 1026
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AATTTCATAACAACCGACAATAGTTGTGGGCCTGAGCCTCCATTGGTGGAAAGGCTTGAG
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                                                                                                                                                   ВP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1506
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TTH STANDARD TO ST
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                This CDNA sequence encodes a novel p160 (160.1) which is capable of a conflictivation of p62 confliction of a variety of genes upon activation of p62 confliction in a manner similar to p62. The genes transcribed in response to p160 activation likely include those of which are involved in T or B cell correction in a manner similar to p62. The genes transcribed in response to p160 activation likely include those of which are involved in T or B cell correction of the cell specific factors e.g. lymphokines or antibodies. This p160 correction is also a substrate for serine/threonine kinase activity. Corrections of polypeptide is also a substrate for serine/threonine kinase activity. Corrections of proteins stimulating expression of cellular proteins e.g. cell cycle regulatory. Proteins stimulating expression of cellular proteins e.g. cell cycle regulatory proteins stimulating expression at specific corresponse it may be used to treat disorders where this is beneficial, e.g. infections by pathogenic microorganisms. p160 can be used to expand T corrections by pathogenic microorganisms. p160 can be used to expand T corrections could reduce B or T cell responses and may be used to treat disorders where this is beneficial, e.g. inhibitors could reduce B or T cell responses and may be used to treat a corrections. Crohn's diseases etc.

Cumultiple sclerosis allergic reactions, Crohn's diseases etc.

Sequence 3901 Bp; 781 A; 1183 C; 1128 G; 809 T;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
                                                                                                                                                                modulation; cellular response; cell proliferation; p56-lck; ss.
                                                                                                                                                                                                                                11-MAR-1998 (first entry)
Human p160 cDNA 160.2.
p160; p62; cytoplasmic; T cell;
                                                                          Key
CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1335 agtaaagaagagatggagtttttggatgagatcaaaatggaagcaagtgaggttgaaaaa 1394
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                                                                                                                                       Homo sapiens
                                                                                                                                                                                                                                                                                                                                              T89346;
                                                                                                                                                                                                                                                                                                                                                                       T89346 standard; cDNA;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           3142 GAAGAAGAAGAAGAAGAAGAAGAAGAAGAAGAAGAACTTTGAAGAAGA----GGAAGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1215 gaagaagaggtagaaggaagtggagaaggtcggtaggactgagatgaccttgttccag
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            cDNA encoding p62 and p160 and corresponding proteins - used in the treatment of autoimmune disease and for T and B cell proliferation, e.g. for treatment of tumours claim 82; Fig 8; 175pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WPI; 97-341351/31.
P-PSDB; W31185.
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Joung I, Shin J. Strominger JL, Vadlamudi RK;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            19-DEC-1995;
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11-DEC-1996;
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                                                                                                   Location/Qualifiers
/product= p160
                                       /*tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     439. .3846
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                                                                   .3156
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Pred. No. 0.0
                                                                                                                                                                                                                                B cell; development; activation;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mismatches
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                                                                                                                                                                                                autoimmune
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          ID ACC DEFENDED PROSESSES 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
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Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         This cDNA sequence encodes a novel p160 (160.2) which is capable of activating transcription of a variety of genes upon activation of p62 and is capable of binding to the p62/p561pk complex to modulate Lck function in a manner similar to p62. The genes transcribed in response to p160 activation likely include those of which are involved in T or B cell development/differentiation, T or B cell activation or production of T or B cell specific factors e.g. lymphokines or antibodies. This p160 polypeptide is also a substrate for serine/threonine kinase activity. p160 polypeptides can modulate degradation of cellular proteins e.g. cell cycle regulatory proteins stimulating expression of cell cycle dependent kinase inhibitors and arresting cell cycle progression at specific boundaries to thereby modulate cell proliferation. As p160 boosts B cell response it may be used to treat disorders where this is beneficial, e.g.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1335
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2452
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          infections by pathogenic microorganisms. p160 can be used to expand T cell populations for treating infectious diseases or cancer and p160 inhibitors could reduce B or T cell response may be used to treat variety of autoimmune diseases, e.g. diabetes mellitus, arthritis, multiple sclerosis allergic reactions, Crohn's diseases etc. Sequence 3211 BP; 649 A; 990 C; 948 G; 624 T;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     cDNA encoding p62 and p160 and corresponding proteins - used in the treatment of autoimmune disease and for {\tt T} and {\tt B} cell proliferation,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Joung I, Shin J, WPI; 97-341351/31.
Mouse pIg receptor protein gene - used for preparing gene mice, useful for study of human poly Ig receptor protein claim 1; Page 4-14; 18pp; Japanese.
                                                                                                                                                                                                                                                                          Mus sp.
J10057066-A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           WO9722255-A1.
                                                                                                                                                                  03-MAR-1998.
19-AUG-1996; 217154.
19-AUG-1996; JP-217154
                                                                                                                                                                                                                                                                                                                                  mouse; poly Ig receptor protein; pIgR protein; knockout mouse; disease model; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             26-JUN-1997.
11-DEC-1996;
                                                                                                    (HONS ) YAKULT HONSHA KK.
WPI; 98-254323/23.
                                                                                                                                                                                                                                                                                                                                                                                                   Mouse poly
                                                                                                                                                                                                                                                                                                                                                                                                                                         11-JUN-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        V15422 standard; DNA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (DAND ) DANA FARBER CANCER INST INC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .g. for treatment of tumours
laim 82; Fig 10; 175pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Local Similarity
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  agtaaagaagagatggagtttttggatgagatcaaaatggaagcaagtgaggttgaaaaa 1394
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GAAGAAGAAGAAGAAGAAGAAGAAGAAGAAGAAGACTTTGAGGAAGA----GGAAGAG
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                                                                                                                                                                                                                                                                                                                                                                                                                                      (first entry)
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                                                                                                                                                                                                                                                                                                                                                                                                receptor protein gene.
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Pred. No. 0.00
0; Mismatches
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                                                                                                                                                                                                                                                                                                                                                                        deficiency;
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1162 agaagacagtgjaaggaggtgaaaggataatcgtaaaagaggttgaagagatagaagaag 1221

Best Local Similarity Matches 114; Conserv

Conservative

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Mismatches

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Pred.

44.4; No. 0

.019; DВ 116;

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Length

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        The present sequence represents the mouse poly Ig receptor protein gene, which has a 2932 bp sequence. The new gene can be used to produce a gene knockout mouse, useful as a disease model of human poly Ig receptor protein deficiency.

Sequence 29392 BP; 8318 A; 6747 C; 6514 G; 7813 T;
                                                                                                                              claim 1, Page 666-669; 2084pp; English.

A computer readable medium has been developed which has recorded on it 982 nucleotide sequences isolated from the Enterococcus faecalis genome. X12938 to X13919 represent these nucleotide sequences which are primary nucleotide sequences, also known as contigs. The computer-based system can identify fragments of the Enterococcus faecalis genome with commercial importance. The products can be used to detect the presence of Enterococcus faecalis in samples. They can also be used for diagnosing Enterococcal infection in an animal and monitoring
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1161 gagaagacagtygaagaaggtgaaaggataatcgtaaaagaggttgaagagatagaagaa 1220
                                progression of disease, and for identifying agents which can be used to modulate the growth or pathogenicity of Enterococcus faecalis, or another related organism, in vivo or in vitro. In particular the polypeptides encoded by the Enterococcus faecalis nucleotide sequences can be used in vaccines to prevent or attenuate an Enterococcal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1341 gaagagatggaçıttttggatgagatcaaaatgga 1375
                                                                                                                                                                                                                                                                                                                              New isolated Enterococcus faecalis polynucleotides and polypeptides - used to develop products for the detection of Enterococcus and for use in vaccines for prevention or attenuation of Enterococcus
                                                                                                                                                                                                                                                                                                                                                                                                                                                  04-MAY-1998; U08985.
14-NOV-1997; US-056009.
06-MAY-1997; US-044031.
16-MAY-1997; US-046655.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        vaccine; attenuation; computer readable medium; ds \tt Enterococcus \ faecalis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Enterococcus faecalis; contig; detection; Enterococcal infection;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        X13039;
                                                                                                                                                                                                                                                                                                                                                                                                             Barash SC, Dillon PJ, Kunsch CA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             X13039 standard: DNA; 7215
Sequence
                                                                                                                                                                                                                                                                                                                                                                                           WPI; 99-045171/04.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  12-NOV-1998.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      19-MAR-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                  (HUMA-) HUMAN GENOME SCI INC
                    infection.
                                                                                                                                                                                                                                                                                                                  infection
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Local
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        gaggtagagaaggaagtggagaaggtcggtaggactgagatgaccttgttccagagattg 1280
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
  7215 BP;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                faecalis genome contig SEQ ID NO:102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2.9%;
2685 A;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ВP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0;
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Pred.
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1122 C;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               106;
1520 G;
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                                                                                                                                                                                                                                                                                                                                                                  telomerase and related nucleic acids, including the subunit
c proteins p140, p105, p48 and p43. The proteins may be produced
c recombinantly from transformed host cells or purified from human
ccells. Also included are human telomerase RNA (see v05373) and
cf functional derivatives (see v05374 and v16092-93), as well as p105
csynthetic DNA sequences (v00370-72). The invention also provides
cisolated telomerase hybridisation probes and primers capable of
cspecifically hybridising with the telomerase gene, telomerase-
pecific binding agents such as specific antibodies, and methods of
cspecifically hybridisation compositions in diagnosis (e.g.
specific binding agents such as specific antibodies, and methods of
cspecific binding agents such as specific antibodies, and methods of
cspecific binding agents for telomerase transcripts), therapy
cle.g. gene therapy to modulate telomerase gene expression) and in
the biopharmaceutical industry (e.g. reagents for screening
chemical libraries for lead agents). Modulation of telomerase
cexpression can be used for the treatment or prevention of cancer,
restenosis, inflammation, myocardial infarction, glomerulonephritis,
createnosis, inflammation, myocardial infarction, glomerulonephritis,
                                                                                                                                             Matches
                                                                                                                                                                               Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               This polynucleotide comprises a synthetic, ambiguity-maximised DNA coding for the plo5 subunit (see W46593) of human telomerase It is based on an isolated cDNA clone (see V05369) for plo5 and encompasses all possible nucleic acids encoding the full-length protein. The invention provides methods relating to human the composition of the control of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Human telomerase p105 subunit synthetic gene.
Telomerase; p105; human; cell replication; cancer; restenosis; multiple sclerosis; inflammation; rheumatoid arthritis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             New nucleic acid encoding human telomerase proteins or their fragments - useful for therapeutic modulation of telomerase activity and for screening for potential modulators of telomerase-target
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     15-JAN-1998.
08-JUL-1997; U12296
08-JUL-1996; US-6769
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        5707
                                                                                                                                                                                                                                                                                                                  transplant rejection or infections (e.g. with HIV). Sequence 2277 BP; 511 A; 212 C; 395 G;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Disclosure; Page 19-20; 32pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WPI; 98-101043/09
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226 ACNGTNGCNAARAANAARYTNMGNAAYAARACNAARGARAARGGNAARAAYGARAAYWSN 285
                                                           756 acagaaggtgacaacaagcttgttggaaacatctcttggagaataaagaccctagacagt 815
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                                                                                                                                                 138;
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                                                                                                                                                                               2.8%;
                                                                                                                                                                           Score 44.2;
Pred. No. 0
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                                                                                                                                          308;
                                                                                                                                                                                                     Length 2277;
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Sequence split into
Fragment Name
67134 TTCACTATTAATATTGGAAGAAAAAGAGAAAGAGTATAAAAACTTGCCAGTTGTTAGTAT 6719:
                                                                                                                                                                                                                                                                                                                                                                                      67014 TGAGAAGGATATGGATAACAATCTAAATATTCTATTAACAAATATTGAAGAAAAAGATAA 67073
                                                                                                                                                                                                                                                                                 1220 agaggtagagaagtagaagtggagaaggtcggtaggactgagatgaccttgttccagagatt 1279
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1160 tgagaagacagtggaagaaggtgaaaggataatcgtaaaagaggttgaagagatagaaga 1219
                                                                                      1280 ggctgaaggatttaatgaactgaagcaagacgaggagaatttcgtgagagagttaagtaa 1339
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1176 gaaggtgaaaggataatcgtaaaagaggttgaagagatagaagaaggtagaaggaa 1235
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1340 agaagatggagtttttggatga 1363
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08-JUL-1997; U12297.
08-JUL-1996; US-676967.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 21-JUL-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           native nucleic acid molecules) and for regulating cell growth/density tolerance. The agents and the telomerase proteins should be very
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Disclosure; Pages 20-21; 32pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  specific, e.g. they are selective for cancer cells without harming
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              somatic cells
286 GARTGYCCNAARAARGARCCNAARGCNAARAGCNAARGTNGCNGAYAARAARGCNMGN 345
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                                                                                                                                                  ACNGTNGCNAARAARAARYTNMGNAAYAARACNAARGARAARGGNAARAAYGARAAYWSN 285
                                                                     Similarity
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                                                                                                                                                                                                                                                                                                             Conservative
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KSHV, HHV8, human herpes virus 8; macrophage inflammatory protein II;
interleukin-6; II-6; interferon regulatory factor; rheumatoid arthritis;
complement-binding protein; glycoprotein; capsid protein IV; infection;
immediate early protein; Kaposi's sarcoma; protective vaccine; lymphoma;
lymphoproliferative disease; leukaemia; splenomegaly; mycosis fungoides;
unvisation of the control of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1116
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             immune status; anti-inflammatory agent; therapy; ds.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           sarcoma associated herpes virus.
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                                           /product= interferon regulatory factor 2 89600. .90541
                                                                                                                                                                                                                                                                                                                                                                                                                                                   /product= protein T1. complement (58976. 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /product= glycoprotein B complement (17261. .17875)
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                                                                                                                                                                              complement (88410.
                                                                                                                                                                                                                    /product= glycoprotein L
                                                                                                                                                                                                                                                                                                                     /product= glycoprotein M
complement (69412. .69915)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CC This sequence represents the long unique region and terminal repeat of CC the Kaposi's sarcoma-associated herpes virus (KSHV). KSHV is also known CC as human herpes virus 8 (HHV8). This sequence contains the DNAs of the CC invention which encode KSHV polypeptides selected from: (a) viral CC (c) viral IRF 1: (d) complement-binding protein; glycoproteins B, M or L; (d) capsid protein IV encoded by ORF65; and (e) immediate early protein encoded by ORF73. Labelled probes for the nucleic acid, proteins encoded by it, and antibodies (Ab) specific for the proteins are useful for CC detecting HHV8, specifically for diagnosis of kaposi's sarcoma, in body it, and antibodies (Ab) specific for the proteins are useful for CC fluids or tissue samples. HHV8 infections can be treated with antisense CC protein. Ab may be used for prophylaxis or treatment of HHV8 infection, con the protein can be used in protective vaccines. Ab may also be used the protein can be used in protective vaccines. Ab may also be used the protein can be used in protective vaccines. Ab may also be used cother lymphoproliferative diseases such as lymphomas, leukaemia, the protein can be useful for drug screening. HHV8 derived peptides can be used as targets for antiviral drugs, e.g. dihydrofolate reductase gene the immine status of a patient infected with urvor urvo deptides.
                                                                                                                                                                                                                                                                                                                                                               Matches 126;
                                                                      126203 ACGAGGAGGATGACGAGGAGGATGACGAGGATGACGAGGAGGATGACGAGGAGGATG 126144
                                                                                                                                  1258 agatgaccttgttccagagattggctgaaggatttaatgaactgaagcaagacgaggaga 1317
                                                                                                                                                                                                                                                                    25-JUL-1996; US-686243.

25-JUL-1996; US-686349.

25-JUL-1996; US-686350.

25-JUL-1996; US-687253.

25-JUL-1996; US-68814.

05-SEP-1996; US-706678.

10-OCT-1996; US-728823.

13-NOV-1996; US-747887.
1318 atttcgtgagagagttaagtaaagaagagatggagtttttggatgagatcaaaatggaag 1377
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           the immune status of a patient infected with HIV. HHV8 derived protein viral MIP III may be used as an anti-inflammatory agent for,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     proteins - useful for, e.g. detecting levels of HHV8 in preparation of vaccines for treatment of, HIV patients Example 2; Page 135-203; 230pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    New nucleic acid encoding Kaposi's sarcoma associated herpes virus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Bohenzky RA, Chang Y, Edelman IS, Moore PS, Russo JJ; WPI; 98-130615/12.
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(UYCO) UNIV COLUMBIA NEW YORK.
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05-FEB-1998.
22-JUL-1997; U13346.
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                                                                                                                                                                                                                                                                                                                                                                                               Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             open reading frames.
quence 137507 BP;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        treating rheumatoid arthritis. This sequence is stated as containing
                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /product= interferon regulatory factor complement (111931. .112443)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /product= interferon regulatory factor 90173. .90643
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /product= immediate early protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /product= capsid protein IV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              complement (93636. .94127)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            complement (123808.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /product= glycoprotein
                                                                                                                                                                                                                                                                                                                                                                                        2.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             .90643
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             32579 A;
                                                                                                                                                                                                                                                                                                                                                            0,
                                                                                                                                                                                                                                                                                                                                                                                    Score 43.2; DB Pred. No. 0.16;
                                                                                                                                                                                                                                                                                                                                                     Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .127296)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      37795 C;
                                                                                                                                                                                                                                                                                                                                                                                                             DB 1; Length 137507;
                                                                                                                                                                                                                                                                                                                                                     138;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      35758 G;
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О<u>У</u>.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Db 125963 AGGAGCCACAACAGCAGGAGCCAC 125940
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
                                                                                                                                                                                                                                                                                                                              20903 ACGAGGAGGATGACGAGGATGACGAGGAGGATGACGAGGAGGATGACGAGGAGGATG 20844
                                                                                                                                                                                                                                 1438 aagaaccaccattgttgtacaaac 1461
                                                                                1378 caagtgaggttgaaaaattgtttgggaaagctttgccaatcaggaaggtcaggtagaaac 1437
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            herpesvirus (KSHV) LUR (long unique region). This fragment contains coding regions for ORF65 which encodes capsid protein IV ORF66, ORF67 which encodes tegument protein IV, ORF68 which encodes a glycoprotein, ORF69, K12 which encodes kaposin, K13, ORF72 which encodes cyclin D, ORF69, K12 which encodes immediate early protein (IEP), K14 which encodes OX-2 (V-adh), ORF74 which encodes G-protein coupled receptor, ORF75 which encodes tegument protein/FGARAT, K15, KSHV is a new human Herpesvirus (HHV8) believed to cause Kaposi's sarcoma (KS) which is the most common form of neoplasm occurring in persons with acquired immune deficiency syndrome (AIDS). The DHFR protein is useful for vaccination, prophylaxis, diagnosis and treatment of a subject with Kaposi's sarcoma and for deficiency syndrome (AIDS).
                                                                                                                                                                                                                                                                                                                                                                        Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KSHV LUR DNA (nucleotides 105,301-137,507).

Kaposi's sarcoma; acquired immune deficiency syndrome; AIDS; DHFR; Bc1-2; dihydrofolate reductase; LUR; long unique region; vaccine; prophylaxis; diagnosis; treatment; HHV8; capsid protein IV; tegument protein IV; glycoprotein; kaposin; cyclin D; immediate early protein; IEP; OX-2; "-adh; G-protein coupled receptor; FGARAT; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1378 caagtgaggttgaaaaattgtttgggaaagctttgccaatcagggaaggtcaggtagaaac 1437
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                sarcoma in a cell.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Disclosure; Column 155-182; 109pp; English.
This sequence is a fragment of the Kaposi's sarcoma-associated
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Kaposi's sarcoma-associated herpes virus nucleic acid - encodes di:hydro:folate reductase and is useful for treatment, prophylaxis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1438 aagaaccaccattgttgtacaaac 1461
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   or diagnosis of Kaposi's sarcoma
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Bohenzky RA, Chang Y, Edelman IS, Moore PS, Russo JJ; WPI; 99-069741/06.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 29-NOV-1996; 770379.
29-NOV-1996; US-770379.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Kaposi's sarcoma-associated herpesvirus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (UYCO ) UNIV COLUMBIA NEW YORK.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              25-FEB-1999 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         V73805 standard; DNA; 32207 BP
                                                                                                                                                                                                                                                                                                                                                                                                                          2.8%;
Local Similarity 47.7%;
les 126; Conservat...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        for detecting expression of a DNA virus associated with Kaposi's
                                                                                                                                                                                 atttcgtgagagagttaagtaaagaagagatggagtttttggatgagatcaaaatggaag 1377
                                                                                                                                                                                                                                                                              agatgaccttgttccagagattggctgaaggatttaatgaactgaagcaagacgaggaga 1317
                                          ACGAGGAGGACGGGGGGGATGGAAACAAAACGTTGAGCATCCAAAGTTCACAACAGCAGC
                                                                                                                                       ATGACGATGATGAGGACAATGAGGACGAGGAGGATGACGAGGAGGACAAGAAGGAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ACGAGGAGGACGGGGGGGGATGGAAACAAAACGTTGAGCATCCAAAGTTCACAACAGCAGC 125964
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          32207 BP;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       7229 A;
                                                                                                                                                                                                                                                                                                                                                                                                                               0; Mismatches 138; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 43.2; DB Pred. No. 0.083;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9156 C;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DB 1;
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cells tor .... and development.
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26-JUL-1996; U12310.
28-JUL-1995; US-001713.
(REGC ) UNIV CALIFORNIA.
Burris TP, Guo W, McCak
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   20663 AGGAGCCACAACAGCAGGAGCCAC
                                      hyperplasia congenita
Claim 2; Fig 7b; 131pp; English.
A newly isolated nucleic acid (T51756) comprises exon 1 and the 5'
A newly isolated nucleic acid (T51756). It includes
distinguishing promoter elements and the 5' end of the DAX-1 coding
region. DAX-1 stands for dossage sensitive sex reversal locus,
adrenal hypoplasia congenita at chromosome x, number 1. Carriers
and individuals affected with adrenal hypoplasic congenita (AHC)
and hypogonadotropic hypogonadism (HH) display a range of genetic
abnormalities within the DAX-1 locus. The DAX-1 promoter region
can be incorporated into a vector (e.g. adenovirus) and used to
direct a therapeutic gene (e.g. thymidine kinase) to steroidogenic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DAX-1 gene promoter region.
DAX-1; nuclear hormone receptor; adrenal hyperplasia congenita;
                                                                                                                                                                                     New isolated DAX-1 gene - used to develop and treatment of adrenocortical disorders
                                                                                                                                                                                                              P-PSDB; W12679
                                                                                                                                                                                                                                                                                                                                  cds
                                                                                                                                                                                                                                                                                                                                                                                           misc_signal
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 hypogonadotropic hypogonadism; gene therapy; diagnosis; thymidine kinase; ss.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                08-MAY-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      T51756 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               13
                                                                                                                                                                                                                       .s TP, Guo W,
97-145382/13.
                               for the treatment of adrenocortical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (first entry)
                                                                                                                                                                                                                                                                                                                                                      /*tag= g
/label= GC
/note= "GC box,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /note= "putative
element"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /note= "DAX-1 promoter region (-1 to preferred for use in vector construct
                                                                                                                                                                                                                                                                                                                                 transcription
1580. .1798
                                                                                                                                                                                                                                                                                                                                                                                          1744. .1749
                                                                                                                                                                                                                                                                                                                                                                                                                             transcription
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1392. .1397
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              the invention"
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1. .1579
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DNA; 1798
                                                                                                                                                                                                                                                                                                                                                                                                                                                      /*tag= e
/label= GC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /note= "GC box,
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                                                                                                                                                                                                                                                                                                                                                                                                                                          note= "GC box,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /label= SF-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             note= "GGAA tetranucleotide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /*tag=
                                                                                                                                                                                                                                     McCabe ERB,
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        562 A;
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                                                                                                                                                                                                                                                                                                          end of DAX-1
                                                                                                                                                                                                                                                                                                                                            x, recognition factor"
                                                                                                                                                                                                                                                                                                                                                                                                                             x, recognition factor"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   x, reognition
factor"
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                                                                                                                                                                                                                                   Vilain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   steroidogenic
       393 C;
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                                                                                                                                                                                     prods. for the such as adrenal
                               disorders of metabolism
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             site
        495
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                                                                                                                                                                                                                                                                                                                                                         site
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       0
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       348 T;
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                        Human Centromers antigen CENP-B and its cDNA - for detecting auto-antibodies to CENP-B in auto-immune disease diagnosis

Claim 1; Fig 1; 20p; English.

Cscreening of a human endothelial cell cDNA library in lambda gtll with serum GS provided a positive clone, lambda CENP-B1, contg. a cDNA insert of 1,282 bp. Phage clones contg. longer cDNA inserts were obtd. by screening a cDNA library constructed from human placental mRNA, clones lambda CENP-2-4. The clones were found to have overlapping sequences and together made up the complete CENP-B chave overlapping sequences and together made up the complete CENP-B chave overlapping sequences and together polypeptide comprising an epitope which is reactive with samples contg. anti-centromere autoantibodies (ACAS) and is destroyed by disruption at a site 42 amino acids from the C-terminus of CENP-B or immunologically binds the monoclonal antibody produced by hybridoma cell line ATCC HB 9667. The CDNA may be used to transform cells which may be used to produce recombinant CENP-B which may be used as an assay reagent for detection of autoantibodies in the diagnosis of autoimmune diseases, esp. clanging and ACCPTET variant of especial dysmobility/scleroactylyl/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local Simi
Matches 105;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1254
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Centromere; autoantigen; anticentromere; ACA; CREST; chromosomal; auto immune disease; calcinoses; Raynaud's phenomenon; esophageal dismobility; scleroactylyl; elangiectasiae; scleroderm; ss.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             misc_feature
              elangiecyasiae
                                                                                                                                                                                                                                                                                                                                           P-PSDB; R34936.
                                                                                                                                                                                                                                                                                                                                                       Cleveland D, Earn: WPI; 93-116791/14.
                                                                                                                                                                                                                                                                                                                                                                                     29-MAR-1988; US-174854.
(UYJO) UNIV JOHNS HOPKINS
                                                                                                                                                                                                                                                                                                                                                                                                                                          23-MAR-1993.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Q39212
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Q39212
                                                                                                                                                                                                                                                                                                                                                                                                                            29-MAR-1988;
                                                                                                                                                                                                                                                                                                                                                                                                                                                              US5196307-A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           195 CAAAAAAAGAAGAGGGAGGATGGGAGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             75
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AGGGAGGGAGGGAAGGAAGGAAGGAAGGAAGGAAAGGAAGGAAGGAAGGAAGGAAGG
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      standard; cDNA; 2643
iae (CREST) variant of scleroderma.
2643 BP; 512 A; 801 C; 878
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                            174854
                                                                                                                                                                                                                                                                                                                                                                         Earnshaw W,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /*tag= b
/note= "from
484. .1334
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note= "from
1335. .2643
/*tag= d
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 42.6; DB Pred. No. 0.032;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              clone CNP-B1'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             clone CNP-B3"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             clone CNP-B2'
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<u>ن</u>
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RESULT 15
T35277/c
ID T35277 standard; cDNA; 1607 BP.
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                                                                                                                                           Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match 2.7%;
Best Local Similarity 48.5%;
Matches 116; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         01-AUG-1996.
24-JAN-1996; G00143.
27-JAN-1995; GB-001683.
(GLAX ) GLAXO GROUP LTD.
Power CA, Wells TNC;
                  1218 gaagaggtagagaaggaaggtggagaaggtc 1247
                                                                               1158 attgagaagacagtggaagaaggtgaaaggataatcgtaaaagaggttgaagagatagaa 1217
                                                                                                                                                                                                                              Example: Fig 3: 47pp: English.

A cDNA clone (T35277), designated E1-C19, codes for chemokine receptor K5.5 (R99274), which binds MIP-1 alpha, RANTES and/or MCP-1. It was isolated from a human spleen lambda gt11 cDNA library by screening with clone TM(2-7)5.5 (see also T35278), obtd. by PCR amplification (see also T35279-80) of cDNA prepd. from human basophilic KU812 cells. The cDNA can be used to study gene function and regulation or the design probes for chemokine receptors. It may also be incorporated into a vector for prodn. of recombinant K5.5 chemokine receptor, useful for screening
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Key
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          735277;
09-DEC-1996 (first entry)
Chemokine receptor K5.5 cDNA.
Chemokine receptor K5.5; MIP-1-alpha; RANTES; MCP-1; allergy; atheroma; HIV: AIDS; graft rejection; stem cell; ss.
                                                                                                                                                                                                                                                                                                                                                                                             Chemokine receptor which binds MIP-1-alpha, RANTES and/or MCP-1 useful in screening for agents to treat asthma, hay fever, eczer allergies, atopic dermatitis, rhinitis or conjunctivits.
                                                                                                                                                                                                       antagonist agents. Sequence 1607 BP;
                                                                                                                                                                                                                                                                                                                                                                                                                                            Power CA, Wells T
WPI; 96-362692/36
P-PSDB; R99274.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1264 ccttgttccagagattggctgaaggatttaatgaactgaagcaagacgaggagaatttc 1322
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1144 cgctcgtggagagaattgagaagacagtggaagatgaaaggataatcgtaaaagagg 1203
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GAAGGGGAAGAAAGAAGGGGGAAGAAGATC 11
                                                                                                                          60;
                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Location/Qualifiers 183. .1265
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                                                                                                                                           2.7%;
66.7%;
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Pred. No. 0.045;
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                                                                                                                            Mismatches
                                                                                                                                                                                                        404 C;
                                                                                                                                                                                                        353 G;
                                                                                                                          30;
                                                                                                                                                      Length 1607;
                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                               eczema,
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Search completed: October 14, 1999, 01:54:22 Job time: 3452 sec

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Title:
Perfect score:
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IDENTITY_NUC
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pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

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Ubs zpi/gii.	U/2515 SW31CA15	/25212 BNLGHIOZ	COURT COAL		CZ6006 Mon	041000 1045 Unman	ON 1838 HOMO SA	671249 wh68e12	289808 gwl2d12	กรร282 AU03528	.I130237 SWOvL3CA	648200 uk40a07	648011 uk39506.	1398/50 NCWUSAST	-00393US AU0393US	1311946 (464011	12110/8 ta8/b11	A/89/28 VL/6C00	100100+ 70000 n	100 WEGICECT	0103	076456 OFBEEDO	010040 7000000	1258 ASTSB330	651916 ns390	A493328 nh55e05	I717513 UI-R-Y0	608183 vc84b09	387538 vc84b09	040938 Homo sa	5 BSBmL3S	9948 16303 I	051738 AU051	609175 af12k	80172 me89b09	043340 Homo	74652 MMTCC2	193922 rs07a12.	395403 MA003518	3616 EST109783	76813 11591 Lamb	550452 1605m3 g	781 C11781 Yuj	483033 EST	668224 60501800	12 18839 Lam	Description

ALIGNMENTS

NID VERSION	ACCESSION	TION		N37612	RESULT 1
g1158754 N37612.1 GI:1158754	sequence. N37612	18839 Lambda-PRL2 Arabidopsis thallana CDNA CLONE 20/C23I/, IIIKNA	N37612 438 bp mRNA EST 0370AN TYPE	1	

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726 gccttcgac-tgccagctgcatgagttccacacagaaggtgacaacaag----cttgttg 780
                                                                       254 AACATCTCGGACTTTAACGGGAAGTGGTACATTACAAGTGGCTTGAATNCAACCTTTGAT 313
                                                                                                                                                                                                                                                                      134 GAGAACAGTGTTGTTGATGAGTTCAACGAGTGTGCTGTGTCGAGAAAAAAGTGTGTTCCT 193
                                                                                                                                                                                                                                                                                                                                                                                                   486 cagacctgcaataaccgtccagatgaaaccgagtgccagattaaatgtgggggatctgttt 545
                                                                                                                                                                                           194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   426 aggatagaactcgcaaagtgcattgccaaccctgcctgtgcagccaatgtcgcgtgcctt 485
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                    14 AGGATAGAACTCGCAAAGTGCATTGCCAACCCTGCCTGTGCAGCCAATGTCGCGTGCCTT 73
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Local
                                                                                                                        aacatctcggactttaacgggaagtggtacattacaagtggcttgaatccaacctttgat 725
                                                                                                                                                                         AGAAAATCTGATCTCGGAGAATTTCCTGCCCCAGACCCTTCTGTTCTTGTACAGAACTTC 253
                                                                                                                                                                                                                       agaaaatctgatctcggagaatttcctgccccagacccttctgttcttgtacagaacttc 665
                                                                                                                                                                                                                                                                                                                 gagaacagtgttgttgatgagttcaacgagtgtgctgtgtcgagaaaaaagtgtgttcct 605
                                                                                                                                                                                                                                                                                                                                                                     CAGACCTGCAATAACCGTCCAGATGAAACCGAGTGCCAGATTAAATGTGGGGATCTGTTT 133
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  358;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Newman,T., deBruijn,F.J., Green,P., Keegstra,K., Kende,H., McIntosh,L., Ohlrogge,J., Raikhel,N., Somerville,S., Thomashow,M., Retzel,E. and Somerville,C. Genes galore: a summary of methods for accessing results from large-scale partial sequencing of anonymous Arabidopsis cDNA clones plant physiol. 106, 1241-1255 (1994)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Lansing, Mi
Tel: 517-353-0854
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Michigan State University
MSU-DOE-PRL, Michigan State University, Plant Biology Bldg., E.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MSU-DOE Plant Research Laboratory
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               On May 8, 1995 this sequence version replaced gi:799424
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /Clone_lib="Lambda-PRL2"
/Clone_lib="Lambda Zip-Lox; Site_1: Sal; Site_2: Not;
/note="Vector: lambda Zip-Lox; Site_1: Sal; Site_2: Not;
/Lambda PRL2 is a cDNA library derived from equal
/ Quantities of 4 pools of mRNA. The mRNA sources were 1)
/ day germinated etiolated seedlings; 2) tissue culture
/ grown roots; 3) staged plants half with 24 hour light
/ cycle, half on 16 hr light, 8 hour dark rosettes; 4)
/ same plants as 3 but aerial tissue (stems, flowers and
/ siliques. The vector is BRL's lambda Zip-Lox. The cDNA
/ inserts were directionally cloned with Sal-Not arms using
/ oligo dT primed cDNA. "
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  22313tcn@ibm.cl.msu.edu
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1 97 c 102 g
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 322.8; DB 2
Pred. No. 2.9e-72;
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AI668224/c
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1293 aatgaactgaagcaagacgaggagaatttcgtgagagagttaagtaaagaagagatggag 1352
                                                               1233 gaagtggagaaggtcggtaggactgagatgaccttgttccagaggattggctgaaggattt 1292
                                                                                                                                                                                                                   1113 agaacggataacacatgtggtcctgaacctgcgctcgtggaggagaattgaggaagacagtg 1172
                                                                                                                                           1173 gaagaaggtgaaaggataatcgtaaaagaggttgaagaagatagaagaagaggtagagaag 1232
                                                                                                                                                                                                                                                                                                     COUNT
                                               416 CTGGAGAAGGAG-----
                                                                                                                                                                                           536 ATGACCGACAACACCTGTGGTCCTGAGCCTCCTCTTGTGGAGAGAATCGAGAAAACTGTG 477
                                                                                                                                                                                                                                                                     596 ATAATACCGGAGCTGGAAAGAGCTGCAAAGAGCGTAGGTCGGGACTTCTCGACGTTCATC 537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 source
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                                                                                                                                                                                                                                                                                                                                                                               Loca1
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              781 gaaacatctcttggagaataaagaccc 807
                                                                                                                 GTGGAAGGAGAGACCATCGTCAGGGAGGTGAAGGAGATCGAGGAGGAGGTTGAGGAG 417
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Stanford University
855 California Ave, Palo Alto, CA 94304, USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Unpublished (1999)
On May 18, 1998 this sequence version replaced gi:3137458
                                                                                                                                                                                                                                                                                                                                                                         Similarity
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Tel: 650 723 2227 Fax: 650 725 8221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Department of Biological Sciences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Contact: Walbot V
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Maize ESTs from various cDNA libraries sequenced at Stanford
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; euphyllophytes; Spermatophyta; Magnoliophyta; Liliopsida; Poales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AI668224 602 bp mRNA
605018D09.x1 605 - Endosperm
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     walbot@stanford.edu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Site_2: XhoI; Kernel endosperm
lab"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         //tissue_type="pericarp, embryo, and e
/dev_stage="10 days post-pollination"
/lab_host="DH5(alpha)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /db_xref="taxon:4577"
/db_xref="taxon:4577"
/clone_lib="605 - Endosperm cDNA library from Schmidt lab"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /organism="Zea mays"
/cultivar="Ohio43"
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                                         -GAGGCGTCACTGTTTCAGAAGCTGGCAGAAGGTCTC 369
                                                                                                                                                                                                                                                                                                                                                                   Score 164.8; DB 5
Pred. No. 5.8e-32;
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Best Local
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1353 tttttggatgagatcaaaatggaagcaagtgaggttgaaaaattgtttgggaaagctttg 1412
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      368 ATGGAGGTGAAACAGGATTTCATGAACTTCTTGCAGGGGGCTGAGCAAGGAGGAGGATGGAG
    536 GCAGGATAGAGCTTGCGAAGTGCATCTCAAACCCTGCATGTGCAGCTAA 584
                                        424
                                                                                 476
                                                                                                                    364 ttgttccatctgcagatgcagttgatgcacttaaaacttgtgcatgcttattgaagggat 423
                                                                                                                                                                                  Local Similarity
                       TTGCTTCAAAGGCTGATGCCGTTGATGCTCTCAAAACTTGTACTTGCTTACTGAAAGAGT 535
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EST242356 tomato shoot, cLEB8K10, mRNA sequence.
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100 Jordan Hall, C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Unpublished (1999)
On Jun 5, 1998 this sequence version replaced gi:3189131.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                van der Hoeven,R.S., Matern,A.L., Vision,T., Chandra,I.,
Ronning,C.M., Craven,M.B., Fujii,C.Y., Bowman,C.L., Nierman,W.,
Fraser,C.M., Venter,J.C., Martin,G.B., Giovannoni,J.J. and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Lycopersicon esculentum
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864 656 4293
                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       dfrisch@CLEMSON.EDU
                                                                                                                                                                                                                                                                                 /note="Vector: pBK_CMV; Site_1: EcoR1; Site_2: Xho1; CLEB - Tomato Shoot Meristem EST Library. Oligo-dT primed cDNA library made from tomato vegetative shoots including meristems and small expanding leaves."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              David Frisch
                                                                                                                                                                                                                                                                                                                                                                                        /clone_lib="tomato shoot, Cornell"
/tissue_type="shoot meristem"
/dev_stage="8 week old plants"
/lab_host="XIOLR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Location/Qualifiers
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/cultivar="TA496"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /clone="cLEB8K10"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /db_xref="taxon:4081"
                                                                                                                                                                                  4.6%;
78.9%;
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                                                                                                                                                                                  Score 72.2; DB 47
Pred. No. 2.3e-08;
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Best Local Similarity
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Rhabditina; Rhabditoidea; Rhabditidae; Peloderinae; Caenorhabditis.

1 (bases 1 to 360)
1 (knses 1 to 360)
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Gene Library Lab
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Eukaryotz; Metazoa; Nematoda; Secernentea; Rhabditia; Rhabditida;
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C11781.1 GI:1559334
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              On Apr 14, 1993 this sequence version replaced gi:693156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Caenorhabditis elegans.
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                             AA550452 621 bp DNA 1605m3 gmbPfHB3.1, G. Roman clone 1605m, mRNA sequence.
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AA550452
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/note="dev_stage=waried, sex=Hermaphrodite male,
tissue_type=whole animal"
20 c 116 g 41 t 1 others
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/strain="CB1489 him-8(e1489)"
/db_xref="taxon:6239"
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48.8%;
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                                                                                                                                                                                                         1299 ctgaagcaagacgaggagaatttcgtgagagagttaagtaaagaagagatggagtttttg 1358
                                                                                                                                                                                                                                                                                                   1239 gagaaggtcggtaggactgagatgaccttgttccagagattggctgaaggatttaatgaa 1298
                                                                                                                                                                                                                                                                                                                                                                                       1179 ggtgaaaggataatcgtaaaagaggttgaagagatagaagaagaggtagagaaggaagtg 1238
                                                                                                                          1359 gatgagatcaaaatggaagcaagtgaggttgaaaaa 1394
                                                                                                                                                                  338 TGTCCACCTTTAGCACCTATTGTTGATGAAGACTTATCTGATGAAGTGTTAGAAGAAATT 397
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                                                                                  398 AGTAATTTAAAAATTGAAGCTGCTGAACTTGTTCAA 433
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      131;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Department of Pathobiology
University of Florida
2015 SW 16th Ave., Bldg. 1017,
Tel: 352 392 4700
Fax: 352 392 9704
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Coppel, R., Cowman, A., Craig, A., Fischer, K., Foster, J., Goodman, N., Hilterberg, K., Holder, A.A., Holt, D., Kemp, D., Lanzer, M., Lim, A., Newbold, C., Ravetch, J.V., Reddy, G.R., Rubio, J., Schuster, S.M., Su, X.-Z., Thompson, J.K., Vital, F., Wellems, T.E. and Werner, E. Current status of the Plasmodium falciparum genome project Mol. Biochem. Parasitol. 79, 1-12 (1996)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Seq primer: T3
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Dame, J.B., Arnot, D.E.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Eukaryota; Alveolata; Apicomplexa; Haemosporida; Plasmodium
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     dame@icbr.ifas.ufl.edu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            nuclease in the presence of 30% formamide at 500C (Vernick, K.D., Imberski, R.B., and McCutchan, T.F. 1988. Nucleic Acids Research 16:5883-6896). The ends of the fragments were polished using T4 DNA polymerase, and the fragments were ligated to EccR V-cleaved and dephosphorylated pBlueScript XE(+). Recombinant plasmids transformed E. coli XLI-Blue."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note-"Vector: pBlueScript SK(+); Genomic DNA, from asynchronous blood stage parasites of the cloned Honduran HB3 isolate cultured in vitro, was digested with mung bean
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /clone_lib="gmbPfHB3.1, G. Ro
/lab_host="E. coli XL1-Blue"
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/db_xref="taxon:5833"
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47.5%;
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                                        1341 gaagagatggagtttttggatgagatcaaaatggaagcaagtgaggtt 1388
                                                                                                                                                                                                                              1221 gaggtagaggaaggaagtggagaaggtcggtaggactgagatgaccttgttccagagattg 1280
                                                                                                                                                                                                                                                                                                                             1161 gagaagacagtggaagaaggtgaaaggataatcgtaaaagaggttgaagagatagaagaa 1220
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GAGGACTCAGAGTCAGAGGAAGAGCCCGAAATGGAGAGAAACAGATGAT 323
                                                                                             GAGGCTGAAACTAAGGAAGAAGAAGAAACAATATCCAAATTCAGAGGGTGAGAGTNAAGGA
                                                                                                                                                                                        GAGCAGGAATACGAAGATGATTGTAGCGATAAGAAAGAACAATCTCAGGACAAAGGTGTA
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T76813.1
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12; Conservative
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Newman, T., deBruijn, F.J.,
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1 (bases 1 to 488)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Arabidopsis thaliana
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     il: 22313tcn@ibm.cl.msu.edu
primer: T7 dye primer.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   517-353-0854
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /note="Vector: lambda Zip-Lox; Site_1: Sal; Site_2: Not; Lambda PRL2 is a cDNA library derived from equal quantities of 4 pools of mRNA. The mRNA sources were 1) 7 day germinated etholated seedlings; 2) tissue culture grown roots; 3) staged plants half with 24 hour light cycle, half on 16 hr light, 8 hour dark rosettes; 4) same plants as 3 but aerial tissue (stems, flowers and siliques. The vector is BRL's lambda Zip-Lox. The cDNA siliques.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                inserts were directionally cloned with Sal-Not arms using oligo dT primed cDNA. "

1. 55 c 153 q 84 t 10 <----
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1993 this sequence version replaced gi:693575
                                                                                                                                                                                                                                                                                                                                                                                                            2.8%;
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                                                                                                                                                                                                                                                                                                                                                                                                         Score 43.6; DB
Pred. No. 0.43;
                                                                                                                                                                                                                                                                                                                                                                                       Mismatches 116;
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                                                                                                                                                                                                                                                                                                                                                                                                                                  DB 23;
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                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 488;
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DEFINITION
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                                                                                                                                                                                                                                                                                                                                            1131 ggtcctgaacctgcgctcgtggagagaattgagaagacagtggaagaaggtgaaaggata 1190
                                                                                                                                                                        1251 agga 1254
                                                                                                                               123 GGGA 126
                                                                                                                                                                                                                 Local
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                                                                                                                                                                                                                                                                                                     Lee, N.H., Weinstock, K.G., Kirkness, E.F., Earle-Hughes, J.A., Fuldner, R.A., Marmaras, S., Glodek, A., Gocayne, J.D., Adams, M.D., Kerlavage, A.R., Fraser, C.M. and Venter, J.C. Comparative expressed sequence-tag analysis of differential gene expression profiles in PC-12 cells before and after nerve growth
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             H33616 02-APR-1991 EST 02-APR-1991 EST109783 Rat PC-12 cells, NGF-treated (9 days) Rattus sp. clone RPNAU73 5' end similar to Protein kinase p58/GTA, mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Rattus. 1 (bases 1 to 339)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           H33616.1 GI:979033
MA003518.C8F Soares normalized S8W Schistosoma mansoni cDNA 3'.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         The Institute for Genomic Research 9712, Medical Center Drive, Rockville, Tel: (301)-838-3529 Fax: (301)-838-0208
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Rattus sp.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (tdbinfo@tdb.tigr.org)
Seq primer: M13 Reverse.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Email: nhlee@tigr.org
For clone availability please contact
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Contact: Lee, NH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             On Sep 21, 1992 this sequence version replaced gi:279339
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      95396786
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Similarity 58.1%;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /clone_lib="Mat PC-12 cells, NGF-treated (9 days)"
/note="Vector: pBluescript SK:; Site_1: EcoRI; Site_2:
/hoI; poly(A)+ RNA was purified from 9-day NGF treated
PC12 cells. cDNA was constructed using an oligo-dT primer
and directionally cloned using the Lambda ZAP II Vector
Kit by Stratagene"
10 c 127 g 42 t 7 others
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /organism="Rattus sp."
/db_xref="ATCC (inhost):2004069"
/db_xref="taxon:10118"
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                      390 bp
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                                                                                                                                                                                                                                                                                                                                                                                                              Score 42.6; DB 23; Length 339; Pred. No. 0.72;
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Best Local Similarity
                       ORGANISM
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                                                                                                                                                                                                                                                                                                                                                                                                                    130 CGAAAAACAGCANTGTCATCATCTTTATTTATCAATGATGTTGAGGATGTATATTCTGT 71
                                                                                                                                                                                                                                                                                                                               Schistosoma manson:
Eukaryota; Metazoa; Platyhelminthes; Trematoda; Digenea;
Eukaryota; Metazoa; Platyhelminthes; Trematoda; Digenea;
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AI395403
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Additional data regarding this EST may be found at http://genome.cwru.edu/schistosoma/est/S8West.html Seg primer: M13 Forward.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Case Western Reserve University 2109 Adelbert Rd, Cleveland, OH Tel: 216-368-5847
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Department of Genetics
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  On May 1, 1998 this sequence version replaced gi:3105850
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Unpublished (1999)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Expressed sequence tags from a normalized adult Schistosoma mansoni
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Bailey,J.A., Bentley,K., Blanton,R.E., Soares,M.B. and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Strigeidida;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Chakravarti,A.
                                                                                                                                                                           AA193922 483 bp mRNA EST 31-JAN-1997 rs07a12.r\ Sommer Pristionchus Pristionchus pacificus cDNA clone 876 5' similar to contains element L1 L1 repetitive element ; mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Email: axc39@po.cwru.edu
                       Pristicachus pacificus.
Pristionchus pacificus
                                                                   EST
Eukaryota; Metazoa; Nematoda; Secernentea; Diplogasteria;
                                                                                          AA193922.1
                                                                                                                                                        sequence.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /dev_stage="8 week old adult worms"
/lab_host="Mus musculus"
/lab_host="Mus musculus"
/note="Vector: pT7T3-pac; Site_1: Not1; Site_2: EcoR1;
Note: normalization has resulted in an increased frequency
cf the rare contaminating mouse (host) sequences (~10%).
For details of library construction see: Bonaldo MF,
Lennon G, Soares MB. Normalization and Subtraction: Two
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /strain="Puerto Rican"
/db_xref="taxon:6183"
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59.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score 42.2; DB Pred. No. 0.94; 0; Mismatches
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Best Local :
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                                                                                                                                                                                                                                                                                                                                                                                                                                    1196 aaaagaggttgaagagatagaagaagaggtagagaaggaagtggagaaggtcggtaggac 1255
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                                                                                                                                                                                                1376 agcaagtgaggttgaaaaat 1395
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                                                                                                                                                                                                                                                                                                                                                                                                                107
                                                                                                                                                              287 AGAGANGGACNTGGCAGAAT 306
                                                                                                                                                                                                                                   167 AGAGAATGAAGAGATGAATGAGGAGGATGAAGAATTGAAGATGTGAATGAGGAAACGGA 226
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                              47 TGAAGAAGAGAAGGACGAACAGAATGAAGAGACAGAAGTTAATGATGGAAAGGAAGAGAC 106
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Local Similarity 47.3%; ses 123; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                 TGAAGATACAAATGAAGAAGGAAGATGGAGAAGATGTTAATGAAGTGGAGAATACTGA 166
                                      MMTCC2 Mouse brain
                     sequence.
                                                            274652
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1 (bases 1 to 483)
Marra,M., Hillier,L., Allen,M., Bowles,M., Dietrich,N., Dubuque,T.,
Geisel,S., Kucaba,T., Lacy,M., Le,M., Martin,J., Morris,M.,
Schellenberg,K., Steptoe,M., Tan,F., Underwood,K., Moore,B.,
Theising,B., Wylie,T., Lennon,G., Soares,B., Wilson,R. and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Email: est@watson.wustl.edu
Contact Dr. Ralf Sommer (sora@mailer.mpib-tuebingen.mpg.de) for
information about this clone...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            WashU Pristionchus EST Project
Unpublished (1997)
On Jan 25, 1995 this sequence version replaced gi:637873.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            High quality sequence stop: 433.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             4444 Forest Park Parkway, Box 8501, St. Louis, MO 63108
Tel: 314 286 1800
Fax: 314 286 1810
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Washington University School of Medicine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Contact: Wilson RK / Pristionchus EST Project WashU Pristionchus EST Project
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Waterston, R.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Neodiplogasterida; Pristionchus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Diplogasterida; Diplogasterina; Diplogasteroidea;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /sex="predominantly hermaphroditic"
/dev_stage="mixed stages (embryo to adult)"
/lab_host="mot applicable (host cell line)"
/lab_host="mot applicable (host cell line)"
/note="vector: Uni-ZAP XR Vector (Stratagene); Site_1: 5'
// ECORI; Site_2: 3' XhoI; 1st strand cDNA was primed with a
XhoI - oligo(dT) primer. Double-Stranded cDNA was ligated
to EcoRI adaptors digested with XhoI and cloned into XhoI
and EcoRI sites. Primary complexity of the library was 10
in the 7th. The library went through one round of
amplification."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           amplification.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /organism="PristionChus pacificus"
/strain="PS 312"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /clone_lib="Sommer Pristionchus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /db_xref="taxon:54126"
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                                                         448 bp
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c
                                        ATCC
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Pred. No. 1.1;
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                           mRNA EST 24-APR-1998 37431 Mus musculus cDNA clone tcc2, mRNA
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AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FEATURES
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ORGANISM
HOMO sapiens (human)
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Mammalia; Eutheria;
                                                                                 EST; expressed sequence tag
                                                                                                                                                                               12-MAR-1999 (Rel. 59, Created)
12-MAR-1999 (Rel. 59, Last updated, Version 1)
                                                                                                                            DKFZp43400923)
                                                                                                                                         Homo sapiens mRNA; EST DKFZp43400923_r1 (from clone
                                                                                                                                                                                                                                                    e1401754
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1219 aagaggtagaagaagtggagaaggtcggtaggactgagattgaccttgttccagagat 1278
                                                                                                                                                                                                                                                                                          AL043340.1
                                                                                                                                                                                                                                                                                                                                   AL043340;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            313
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                    91;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Contact: Abbott, C.M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                On Apr 14, 1993 this sequence version replaced
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         recombinant inbred strains
Genome Res. 6 (8), 715-723 (1996)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Chambers,D.M. and Abbott,C.M.
Isolation and mapping of novel mouse brain cDNA clones containing trinucleotide repeats, and demonstration of novel alleles in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g1405941
274652.1
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                                                                                                                                                                                                                                                                                                                                                                     standard; RNA; EST;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /clone_lib="Mouse brain ATCC 37431"
/tissue_type="brain"
172 a: 72 c 145 g 59 t
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /db_xref="taxon:10090"
/map="810D11; 6; 6p21.1-6p21.31; 8; 8; 17q21"
/clone="tcc2"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /organism="Mus musculus"
/strain="NIH SWISS"
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RESULT Z74652

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TITLE
JOURNAL
COMMENT
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W80172
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Best Local Similarity
"~+~hes 97; Conserv?
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                                                                                                                                                                  ORGANISM
                                                                                                          AUTHORS
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1127 atgtggtcctgaacctgcgctcgtggagagaattgagaagacagtggaagaaggtgaaag 1186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          No s1 sequence available
This clone is available at the RZPD in Berlin
Please contact the RZPD: Ressourcenzentrum, Heubnerweg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Clone from S. Wiemann, sequenced by LMU within the cDNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Submitted (12-MAR-1999) to the EMBL/GenBank/DDBJ databases MIPS, Am Klopferspitz 18a D-82152 Martinsried, GERMANY
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1-740
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Berlin-Charlottenburg, GERMANY; Email: clone@rzpd.de
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           sequencing consortium of the German
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        157
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              W80172 470 bp mRNA EST 25-JUN-1996 me89b09.rl Soares mouse embryo NbME13.5 14.5 Mus musculus cDNA clone IMAGE:402713 5', mRNA sequence.
   Unpublished (1996)
On Oct 18, 1995 th
                                                         Marra, M., Hillier, L., Allen, M., Bowles, M., Dietrich, N., Dubuque, T., Geisel, S., Kucaba, T., Lacy, M., Le, M., Martin, J., Morris, M., Schellenberg, K., Steptoe, M., Tan, F., Underwood, K., Moore, B., Theising, B., Wylie, T., Lennon, G., Soares, B., Wilson, R. and
                                                                                                                    Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; 1 (bases 1 to 470)
                               The WashU-HHMI Mouse EST Project
                                              Waterston, R.
                                                                                                                                                                Mus musculus
                                                                                                                                                                                 house mouse
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /organism="Homo sapiens"
/clone="DKRZp43400923"
/clone_lib="434 (synonym: htes3). Vector pSport1; host DH10B; sites Not1 + SalI"
/dev_stage="adult"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Location/Qualifiers
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2.7%;
51.3%;
this sequence version replaced gi:1023131
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Pred. No. 1.4;
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RESULT 13
AA609175/c
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                                                                                                                                                                  AATGGTTGGAAAATGC
                                                                                                                                                                                                                                                                                                                              agagattggctgaaggatttaatgaactgaagcaagacgaggagaatttcgtgagagagt 1332
                                                                                                                                                                                                                                                                                                                                                                                                                               AGAAAAATAAGCAGGAAAGGAAAGGGAAAGGGAACAAAAAATTAATAAGGAAATGGAAGAAA 66
                                                                                                                                                                                                                                   AAAAGCAACGGCAAGCAGAATTACAGGAGAAAAAGGAAAATCGCAGAAAAAAAGTTTAAAG
                                                                                                                                                                                                                                                                                                 AAGAAGCAAAAAAAACGGGAGAAAGAACATTTGCAAGAAAAAGCAAAAGAAAAATATCAAG 126
sequence.
AA609175
g2457603
                                                 af12b05.si
3′ similar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Contact: Marra M/Mouse EST Project
WashD-HHMI Mouse EST Project
WashIngton University School of MedicineP
4444 Forest Park Parkway, Box 8501, St. Lo
                                                                                AA609175
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Location/Qualifiers
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M.Fatima Bonaldo.
74 c 104 g
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/dev_stage="13.5-14.5dpc total fetus"
/lab_host="bH10B"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /db_xref="taxon:10090"
/map="18p11.1-q11.2"
/clone="IMAGE:402713"
/clone_lib="Soares mouse embryo NbME13.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /sex="unknown"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /strain="C57BL/6J"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 organism="Mus musculus"
                                               357 bp mRNA EST 02-MAR-1998 Soares_testis_NHT Homo sapiens cDNA clone IMAGE:1031409 to contains element LTR1 repetitive element; mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2.7%;
47.7%;
                                                                                  357 bp
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Pred. No. 1.4;
0; Mismatches 134;
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Best Local :
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                                                                                                                                                                                                                                                                                                                                             1520 tcattccataacaattggataaaaaaaaaaaaaaa 1555
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AU051738 Sugano mouse brain mncb Mus musculus cDNA clone MNCb-2388
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On
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1 (Dases 1 to 357)

Hillier, L., Allen, M., Bowles, L., Dubuque, T., Geisel, G., Jost Hillier, L., Allen, M., Bowles, L., Lennon, G., Marra, M., Krizman, D., Kucaba, T., Lacy, M., Le, N., Lennon, G., Marra, M., Martin, J., Moore, B., Schellenberg, K., Steptoe, M., Tan, F., Theising, B., White, Y., Wylie, T., Waterston, R. and Wilson, R. Theising, B., White, Y., Wylie, T., Waterston, R. and Wilson, R. WashU-NCI human EST Project
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Mammalia;
                        Mus musculus
                                                                                                                                 AU051738
                                                                                                                                            5', mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Washington University School of Medicine 4444 Forest Park Parkway, Box 8501, St. Louis,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Unpublished (1997)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Homo sapiens
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                                                                                       AU051738.1
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Mammalia;
                                          house mouse
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314 286 1810
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Double-stranded cDNA was ligated to Eco RI adaptors (Pharmacia), digested with Not I and cloned into the Not I and Eco RI sites of the modified pTTT3 vector. Library went through one round of normalization to Cot5, and was
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note-"Vector: pT7T3D-Pac (Pharmacia) with a modified polylinker; Site_1: Not I; Site_2: Eco RI; 1st strand cDNA was prepared from mRNA obtained from Clontech
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         constructed
68 c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /organism="Homo sapiens"
/db_xref="taxon:9606"
/clone="IMAGE:1031409"
/clone_lib="Soares_testis_NHT"
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Pred. No. 1.3;
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                                                                                                                                                                                                                                                                  1329 gagttaagtaaagaagatggagtttttg 1358
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                                                                                                                                                                                                                                                                                                                                                                                                             1209 gagatagaagaagatagagaaggaagtggagaaggtcggtaggactgagatgaccttg 1268
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                                                                                                                                                                                                                                    644 GAGGNGTGAGANANAATAGGATGNGNATG
                                                                                                                                                                                                                                                                                                        704 NNTGNNAGATGNGNAAAAGAANNNAGGGAATTANNGATGGATAANGAANNCATGGTGAGA
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                                                                                                                                                                                                                                                                                                                                                                             GAGAATAANTAAAAGATAGANGCNGTNAGAGCAAAANAGAGTNNNGAAGNAGNGAGGAAT 705
                                                  g957488
R89948.1
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sasaki,M., Suzuki,Y., Watanabe,M., Imai,J., Shibui,A., Yoshida,K., Hata,H., Yamaguchi,R., Tateyama,S. and Sugano,S. Construction of mouse full length-enriched cDNA libraries by
thale cress.
Arabidopsis thaliana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            URL: http://www.nih.go.jp/yoken/genbank/
Seq primer: 5' end primer: CTTCTGCTCTAAAAGCTGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              National Institute of Infectious Diseases 23-1, Toyama 1-chome, Shinjuku-ku, Tokyo
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Division of Genetic Resources
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      On Jun 22, 1998 this sequence version replaced gi:3247207
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                                                                                        R89948
                                                                                                         sequence.
                                                                                                                        16303 Lambda-PRL2 Arabidopsis thaliana cDNA clone 186L15T7, mRNA
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43.3%;
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Pred. No. 2;
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                                                                                                                                                                1277 attggctgaaggatttaatgaactgaagcaagacgaggagaatttcgtgagagagttaag 1336
                                            1337 taaagaagagatgagatttttggatgagatcaaaatgg 1374
                                                                                                                                                                                                                                                                                                            1217 agaagaggtagagaaggtaggagaaggtcggtaggactgagatgaccttgttccagag 1276
                                                                                                                                                                                                                                                                                                                                                                                                                                source
                                                                                                                                                                                                                                                            231 TGTAGAGGCTGAAACTAAGGAAGAAGAAGAAACANTATCCAAATTCAGAGGGTGAGAGTTA 290
                                                                                                                                                                                                                                                                                                                                                                                           111 AACTGACAGGACAGCAGAAGAGCAGGAAGTGAGTCTAGAAGCTGAATCTGATGACAGAAG 170
AGGAGAGGACTCAGAGTCAGAGGAAGAGCCGAATTGGG 328
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MSU-DOE Plant Research Laboratory
Michigan State University
MSU-DOE-PRL, Michigan State University,Plant Biology Bldg.,E.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Email: 22313tcn@ibm.cl.msu.edu
Seg primer: T7 dye primer.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Tel: 517-353-0854
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//clone="Vector: lambda Zip-Lox; Site_1: Sal; Site_2: Not;
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//clone="Vector: lambda Zip-Lox Revered Plants half with 24 hour light cycle, half on 16 hr light, 8 hour dark- rosettes; 4)
//clone="Vector: lambda Zip-Lox Revered Plants half with 24 hour light cycle, half on 16 hr light, 8 hour dark- rosettes; 4)
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Search completed: October 13, 1999, 18:23:41 Job time: 2509 sec

GenCore version 4.5 Copyright (c) 1993 - 1998 Compugen Ltd.

OM protein - protein search, using sw model

Run on: October 14, 1999, 03:56:24; Search time 34.13 Seconds (without alignments) 979.923 Million cell updates/sec

Title:
Perfect score:
Sequence: US-09-075-375-6 7495

1 MALSLHTVFLCKEEALNLYA.....MEASEVEKLFGKALPIRKVR 1412

Scoring table: BLOSUM62

Searched: 188963 seqs, 23686106 residues

Database : A_Geneseq_36:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

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peptide
                                                         peptide
                                                                                                                  domain
                                                                                                                                                                                                                                                                                                                                                                                                                          Key
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                               Tryptic_peptide-11
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                                                                                                                                        Lipocalin_signature
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Pred. No. 1.6e-193;
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20 Вb γΩ

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PRVDAVDALKTCACLLKECRIELAKCIANPSCAANVACLQTCNNRPDETECQIKCGDLFE TSSFSDSSHCKDKSQICSIDTSFEEIQRFDLKRGMTLILEKQWRQFIQLAIVLVCTFVIV 120

180

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                                                    Matches
                                                                           Query Match
                                                                                                                                                                      and antheraxanthin. This system, termed energy dependent non-radiative energy dissipation or non-photochemical fluorescence quenching, reduces the quantum efficiency of photosystem II (PSII) helping to prevent PSII over-reduction and photoinhibitory damage. The amino acid sequence of the VDE was deduced from an isolated cDNA clone (T66241). VDE nucleic acids (see also T66242-43), in sense or antisense orientation, can be used in genetic constructs to modify VDE levels in plants. Increased levels result in the plant being tolerant of increased light and therefore more
                                                                                                                                                                                                                                                                                      DNA encoding plant violaxanthin de-epoxidase - used to sensitivity of a plant to light Example 1; Fig 1; 41pp; English.
The 55 kDa violaxanthin de-epoxidase (VDE) (W09874) of lettuce catalyses the de-epoxidation of violaxanthin to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           misc_difference 152
                                                                                                                                                                                                                                                                                                                                                                      (CALJ ) CALGENE INC
Bugos RC, Rockholm
WPI; 97-281036/25.
                                                                                                                                                                                                                                                                                                                                                                                                     15-MAY-1997.
07-NOV-1996; U18291.
07-NOV-1995; US-006315.
06-AUG-1996; US-023502.
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misc_difference 162
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misc_difference 146
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misc_difference 134
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misc_difference 190
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misc_difference 175
                                                                                                                 Sequence
                                                                                                                                      productive and/or more resistant to disease. Underexpression of VDE increases photosynthetic efficiency under low light. The Photosesitivity of a range of crops, trees and ornamentals can
                                                                                                                                                                                                                                                                                                                                                           N-PSDB; T66241
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                         1 MALSLHTVFLCKEEALNLYARSPCNERFHRSGQPPTNIIMMKIRSNNGYFNSFRLFTSYK 60
{\tt MALSLHTVFLCKEEALNLYARSPCNERFHRSGQPPTNIIMMKIRSNNGYFNSFRLFTSYK}
                                                                                                                                                                                                                                                                                                                                                                                   Rockholm DC,
                                                                                                                473 AA;
                                                    Conservative
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: 243
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! 158
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373
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132
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                                                               33.3%;
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                                                    0;
                                                               Score 2498; DB 1;
Pred. No. 4.1e-189;
                                                   Mismatches
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misc_difference 134
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Arabidopsis violaxanthin de-epoxidase.
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                                                                                                                                      /note=
misc_difference 159
                                                                                                                                                                                                                                                        misc_difference
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                                                                                                                       /note=
misc_difference 163
                                                                                                                                                                     misc_difference
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15-MAY-1997.
07-NOV-1996; U18291
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                                         misc_difference
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NSVVDQFNECAVSRKKCVPRKSDVGEFPVPDRNAVVQNFNMKDFSGKWYITSGLNPTFDA
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RDFNNFITTDNSCGPEPPLVERLEKTAEEGEKLLIKEAVEIEEEVEKVEVEKVRDTEMTLF
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122
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127
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185
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362
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                                                                                                                                                                                                                                                                                                                                                                            /label= Mat_protein
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                                                                                                                                                                                /note=
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                               /note=
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                               "conserved Cys residue"
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XXXXX DAC I

w24790;

08-OCT-1997 (first entry)

W24790 standard; Protein; 1786 AA

P. falciparum liver stage antigen-3.

Plasmodium falciparum; pre-erythrocyte; liver stage antigen; serum; prophylaxis; Thai strain; gene organisation; exon; intron; hydrophoglycosyl-phosphatidylinositol membrane anchoring sequence; antibody

sequence; antibody;

hydrophobic;

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06-AUG-1996; US-023502.
(CALJ ) CALGENE INC.
Bugos RC, Rockhelm DC,
WPI; 97-281036/25.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             antisense orientation, can be used in genetic constructs to modify VDE levels in plants. Increased levels result in the plant being tolerant of increased light and therefore more productive and/or more resistant to disease. Underexpression of VDE increases photosynthetic efficiency under low light. The photosensitivity carange of crops, trees and ornamentals can be modified. Sequence 462 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   catalyses the de epoxidation of violaxanthin to zeaxanthin and antheraxanthin. This system, termed energy dependent non-radiative energy dissipation or non-photochemical fluorescence quenching, reduces the quantum efficiency of photosystem II (PSII) helping to prevent PSII over-reduction and photoinhibitory damage. The amino acid sequence of the VDE was deduced from an isolated cDNA clone (T66243). VDE nucleic acids (see also T66241-42), in sense or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DNA encoding plant violaxanthin de-epoxidase - used to modify the sensitivity of a plant to light Disclosure; Fig 3: 41pp; English.

The violaxanthim de-epoxidase (VDE) (W09876) of Arabidopsis
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 MAVATHCFTSPCHDRIRFFSSDDGIGRLGITRKRINGTFLLKILPPIQSADLRTTGGRSS
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RPLSAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKLVGVLACAFLIVPSADAVDALKTC 1070
                                                                                                                                                                                           NKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELEKAAKSIGRDFSTFIRTDN 1310
                                                                                                                                                                                                                                             DNKLVGNISWKIKTLDSGFFTRSAVQKFVQDPNQPGVLYNHDNEYLHYQDDWYILSSKIE 300
                                                                                                                                                                                                                                                                                  DNKLVGNISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLYNHDNEYLHYQDDWYILSSKIE 1250
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RPLSAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKLVGVLACAFLIVPSADAVDALKTC 120
                     QDEENFVRELSKEEMEFLDEIKMEASEVEKLFGKALPIRKVR 1412
                                                                             TCGPEPALVERIEKTVEEGERIIVKEVEEIEEEVEKEVEKVGRTEMTLFQRLAEGFNELK 420
                                                                                                     TCGPEPALVEHIEKTVEEGERIIVKEVEEIEEEVEKEVEKVGRTEMTLFORLAEGFNELK 1370
                                                                                                                                                               SRKKCVPRKSDLGEFPAPDPSVLVQNFNISDFNGKWYITSGLNPTFDAFDCQLHEFHTEG
                                                                                                                                                                                                                                                                                                                                                    SRKKCVPRKSDLGEFPAPDBSVLVQNFNISDFNGKWYITSGLNPTFDAFDCQLHEFHTEG 1190
                                                                                                                                                                                                                                                                                                                                                                                                             ACLLKGCRIELAKCIANPACAANVACLQTCNNRPDETECQIKCGDLFENSVVDEFNECAV
QDEENFVRELSKEEMEFLDEIKMEASEVEKLFGKALPIRKVR 462
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
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99.8%;
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Pred. No. 9.9e-183;
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C2 Pre-erythrocytic liver stage antigen-3 (LSA-3) protein. The encoding
C3 gene sequence was isolated by screening a P. falciparum strain T9/96
C4 library with serum from a missionary treated by prophylaxis (for strain
C5 creen a library generated from Thai strain K1. One clone contained a
C6 c.85 kb insert including the genomic sequence T/8867. The gene comprises
C6 cal.8 kb region encoding 3 major blocks of tetrapeptide repeats
C6 cespecially the amino acid sequence VEES, VEEN, VEEI, VAPS, VAPT, etc)
C7 cand a 3' hydrophobic region corresponding to a glycosyl-phosphatidyl-
C8 consitul membrane anchoring sequence. The invention relates to new
C9 colypeptides of at least 10 amino acids derived from the LSA-3 protein
C8 cused to raise antibodies and as vaccines for immunotherapy of malaria.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local :
1194 KDKEKDVSLVVEEVQDND----MDESVEKVLE-----LKNMEEELMKDAVEINDITSK 1242
                                                                                                                                                                    1110 -LKEMFFNLEDVFKS---ESDVITVEEIKDEPVQKEVEKETVSIIEEMEENIVDVLEE-- 1164
                                                                                           1164 -----EKEDLTDKMIDAVEESIEISS-DSKEET
                                                                                                                                                                                                                                                       1073 EGVQETVTEHVEQNVYVDVDVPAMK----DQF------LGILNEAGG----- 1110
                                                                                                                                                                                                                                                                                                                                       1025 -----MFRSIETSIVIQSEE--KVDLNENVVSSILDN--IENMKEGLLNKLENISST 1072
                                        732 TEENKLYGNISWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLYQDDWYILSSK 791
                                                                                                                          674 VSRKKCVPRKSDVGD--FPVPDPSVLVQKFDMKDFSGKWFITRGLNPTFDAFDCQLHEFH 731
                                                                                                                                                                                                             617 LIKECRIELAKCISNPACAANVACIQTCNNRPDETECQ---IKCGDLFENSVVDEFNECA 673
                                                                                                                                                                                                                                                                                               558 HSINQNVPKG-NSGCKFPKDVALMVWEKWGQFAKTATVAIFILSVASKADAVDALKTCTC 616
                                                                                                                                                                                                                                                                                                                                                                               502 RFSWGWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLFSHG----KHNLSPA 557
                                                                                                                                                                                                                                                                                                                                                                                                                       972 EKLNETVFNTVLDKVEETVEISGESLENNEMDKAF-----FSEIFDNVKGIQENLLTG-- 1025
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Plasmodium falciparum poly:peptide(s) and related nucleic acids - derived from the liver stage antigen-3, useful for malaria vaccine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  442 SKEEKEILNELQMEATEVEKLFGRALPIRKLRMALAPHSNFLANHETIKYYVGSKLPGHK 501
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          915 EK----KEVIDVIEEVKEEVATTLIETVEQAEEKSANTITEIFENLEENAVESNENVAENL 971
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                prodn. and diagnosis
Claim 1; Fig 2A-I; 69pp; French.
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WPI; 97-065464/06.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  391 EKLLIKEAVEIEEEVEKEV-----EKVRDTEMTLFQRLLEGFKELQQD----EENFVREL 441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          858 TILENVEETTAESVTTFSNILEEIQENTITNDTI---EEKLEELHENVLSAALENTQSEE 914
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     347 SIIPNLQK-AAKSVGRDEN------NFITTDNSCGPEPPLVE------RLEKTAEEG 390
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27-DEC-1996.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          y Match
2.0%; Score 147.5; DB 1; Length 1786;
Local Similarity 18.1%; Pred. No. 0.013;
hes 207; Conservative 155; Mismatches 374; Indels 409; Gaps
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FR-007007.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Location/Qualifiers 223. .278
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PA PA PA DR DR DR	PFFFFF ZHHHH0	28	Db	VQ	Db Oy	Db .	9	Qy Db	DЪ	Qy	D 6	Db Db	Qy	Db '	Qy !	3 5	Дb	Qy	Db	Qy	Db	Qy
27-APR- 24-OCT- 22-OCT- (TEXA) Lee W, WPI; 95 N-PSDB; Purified inhibit	Key region region	LT ! 26 R728: R728: P728: 27-FI Human (Cell inhik	678	398	1346 1627	584	202	1233 15 52	1525	1173	1502	46	1055	N	99	1390	· ω	894	1279	849	4	792
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CC An anti-mitosin antibody, antibody fragment or a phosphorylated mitosin mitotin the isparticularly useful for the study of the cell cycle. A further use is to control hyperproliferative cells, and so control cC diseases such as psoriasis and breast cancer. It can also be used to
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Claim 4: Fig 8B; 6lpp; English.
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                                                                                                                                                                                                                       --DWYILSSKVENSPEDYIFVYYKGRND-----
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                                                                                                                               PE----SIIPELQTAAQ----KVGRDFNTFIKTDNTCGPEPPL----VERLEKKVEEGE
                                                                                                                                                                           KAENLVLSTNLRNFQGDLVKEMQLGLEEGLVPSLSSSCVPDSSSLSSLGDSSFY--RALL
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QSL----EKLEEKMESQGIMKNKEIQELEQLLSSERQELDCLRKQYLSENEQWQQKLTSV
                                         RTIIKEVEEIEEEVEK----VRDKEVTLFSKLFEG-----FKELQRDEENFLRELSKE
                                                                                     EQTGDMSLLSNLEGAVSANQCSVDEVFCSSLQEENLTRKETPSAPAKGVEELESLCEVYR
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Mitosin; phosphoprotein; mitotic cell cycle; antibody; inhibition; M phase; Antagonist; hyperproliferative ce.
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leukaemia; lymphcma; chromosome segregation.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PPGEDKTQGSSECISELSFSGPNALVPMDFLGNQEDIHNLQLRVKETSNENLRLLHVIED 1160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               HISETTERTPKHD-VHQICDKDAQQDLNLDIEKITETGALK---PTGECSGEQSPDTNYE 1100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              -----PCHDRIRFFSSDDGIGRLGITRKRINGTFLLKILPPI-----QSADL---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              HCIQVAEAEVKEKTELLQTLSSDVSELLKDKTHLQEKLQSLEKDSQALSLTKCELENQIA 1427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RTDNTCGPEPALVERIEKTVEEGERIIVKEVEEIEEE----VEKEVEKVGRTEMTLFQRLA 1363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       QKVIVCLEEELSVVTSERNQL----RGELDTMSKKTTALDQLSEKMKEKTQELESHQSECL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DSWKERFLD------VENELSRIRSEKASIEHEALYLEADLEVVQTEKLCLEKDNENK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLYNHDNEYLH-----YQDDWYILSSKIENK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RDRKVESLLNEMKELDSKLHLQEVQLMT - -
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -RTTGGRS----SRPLSAFRSGFSKGIFDIVPLPSK-----
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2188
2300
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2301
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1885. .1962
2146. .2188
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                                                                                                                                                                                                                                                                                                                                                                                        2165.
                                                            /label= "Bipartite targeting motif"
/note= "optinally A or T"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Produces to the approximate the protein is scancers or psoriasis.

Claim 1; Column 40-52; 43pp; English.

CC This is the amino acid sequence for mitosin, a phosphoprotein of necessary for the cell to ente mitosis. The protein's degradation is calso necessary for the cell to advance into the next stages of mitosis. The mitosin protein, can be used to control the growth of cells. An can inhibit the mitotic cell cycle by preventing the cells from entering the M phase, and over expression of mitosin or its functional equivalent, would inhibit the cycle by preventing the cells from entering cequivalent, would inhibit the cycle by preventing to control the M phase. Antagonists to this protein can be used to control the M phase. Antagonists to this protein can be used to control concer, sarcomas and other neoplasms, bladder cancer, colon cancer, clung cancer and various leukaemias and lymphomas). Reintroduction or concer, sarcomas and other neoplasms, bladder cancer, colon cancer, clung cancer and various leukaemias and lymphomas). Reintroduction or concer, supplementation of lost mitosin function by introduction of the protein cor nucleic acid encoding the protein into a cell can restore defective chomosome segregation, which is a marker of progressing malignancy. CC can also be used for the detection and diagnosis of hyperproliferative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local Similarity
Matches 240; Conserv
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24-OCT-1994;
22-OCT-1993;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            New isolated mitosin protein and gene - useful for, e.g. developing products for therapy and diagnosis of hyper-proliferative disorders
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Lee W,
            769
                                                       726
                                                                                                                                                                                                                                                                                      597
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               433 DEENFVRELS---KEEKEIL------------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           315 LSETLSLEKKEMSSIISLNKREIEELTQENGTLKEINASLNQEKMNLIQK-SESFANYID 373
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       379 LVERLEKTAEEGEKLLIKEAVEIEEEVE-----KEVE-KVRDTEMTLFQRLLEGFKELQQ 432
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (TEXA ) UNIV TEXAS SYSTEM.
Lee W, Zhu X;
                                                                                                                                                                                 LQCSLQTIMNKLNELEKICEILQAEKYE--LVTELND---SRSECITATRKMAEEVGKLL 711
                                                                                                                                                                                                                            VAC-LQTCNNRPDETE--CQIKCGDLFENSVVDEFNECAVSRKKCV--PRK--SDVGDF- 690
                                                                                                                                                                                                                                                                                                                                                                      -----NSVKERESERNQ-CNFKPQMDLEVKEISLDSYNAQLVQLEAMLRNKELKLQESE 596
                                                                                                                                                                                                                                                                                                                                                                                                                  HNLSPAHSINQNVPKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADAVDAL 611
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NRKNELE----QLKEAFAKEHQEFLTKLAFAEERNQNLMLELETVQQALRSEMTDNQNNS 489
         QMHFAELQEK - - - -
                                           QLHEFHTEENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLYQD-- 784
                                                                                       NEVKILNDDSGLLHGELVEDIPGGEF----GEQPNEQHPVSLAPLDESNSYEHLTLSDKEV 768
                                                                                                                                       ----PVPDPSVLVQKFDMKDFSGKWFITRGLNP----
                                                                                                                                                                                                                                                                                                                                                                                                                                                              KSEAGGLKQEIMTLKEEQNKMQKEVNDLLQENEQLMKVMKTKHECQNLESEPIR----- 544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            KRFSWGWEDYFGSIVVAKICSSRRIPRYFRKSPRI------CCGLDSRGLQLFSHGK 551
                                                                                                                                                                                                                                                                             KEKECLQHELQTIRGDLETSNLQDMQSQEISGLKDCEIDAEEKYISGPHELSTSQNDNAH 656
                                                                                                                                                                                                                                                                                                                                       KHCHCL
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EREKSISELSDQYKQEKLILLQRCEETGNAYEDLSQKYKAAQEKNSKLECLLNECTSLCE 433
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US-141239.
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                                                                                                                                                                                                                                                                                                                           --FLSLQSEHKILHDQHCQ--MSSKMSELQTYVDSL 810
                                                                                                                                       725 TEDAFDC 725
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PI PT PS

> Dolganov G; WPI; 98-481207/41. N-PSDB; V59979.

Novel human immunomodulatory poly:peptide(s) - have homology to the yeast RAD50 or Drosophila Septin-2 proteins Disclosure; Pages 136-140; 155pp; English.

	EB-1997; WO-U03159. E-) GENELABS TECHNOLOGIES INC.	27-FEB	PR
	SEP-1998. FEB-1997; U03159.	73	ad Gd
	W09838306-A1.	MO98:	P G
tase	homologue; ye omodulatory ac	Human	XX
	V-1998 (first ent homologue of yeas	25-NO Human	B Di
	95 standard; Protein; 1312 AA. 95;	W712 W712	AC AC
	7	1295	RES W71
	QLNKEKELLVKESESLQARLSESDYEKLNVSKALEAALVEK 1468	1428	Db
	EASE	1364	Qy
1427	HCIQVAEAEVKEKTELLQTLSSDVSELLKDKTHLQEKLQSLEKDSQALSLTKCELENQIA	1368	DЪ
1363	VEEIEEEVE	1307	Qy
1367	QKVIVCLEEELSVVTSERNQLRGELDTMSKKTTALDQLSEKMKEKTQELESHQSECL	1311	DЪ
1306	YIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPEL	1253	Qy
1310	DSWKERFLD;VENELSRIRSEKASIEHEALYLEADLEVVQTEKLCLEKDNENK	1259	Dρ
1252	RIKTLDSGFFTRSAVQKFVQDPNQPGVLYNH	1198	Qy
	KLEYFSCDHQELLQRVETSEGLNSDLEMHADKSSREDIGDNVAKVN	1213	DЪ
1197	EFPAPDESVLVQNENISDFNGKWYITSGLNPTFDAFDCQLHEFHTEGDNKLVGN	1144	Qy
1212	VKKENSDLSE	1200	Db
1144	IANPACAANVACLQTCNNRPDETECQIKCGDLFENSVVDEFNECAVSRKKCVPRKSDLG-	1085	Qy
1199	RDRKVESILNEMKELDSKLHLQEVQLMTKIEACIELEKI	1161	DЪ
1084	NELKELTAPLLLKLVGVLACAFLIVPSADAVDALKTCACLLKGCRIELAKC	1034	Qy
O)	PPGEDKTQGSSECISELSFSGPNALVPMDFLGNQEDIHNLQLRVKETSNENLRLLHVIED	1101	Дb
1034	RTTGGRS:SRPLSAFRSGFSKGIFDIV	1003	Qy
1100	HTSETTERTPKHD-VHQICDKDAQQDLNLDIEKITETGALKPTGECSGEQSPDTNYE	1045	Дb
1003	PCHDRIRFFSSDDGIGRLGITRKRINGTFLLKILPPIQSADL	961	Qy
1044	TLEMESKLAAEKKQTEQLSLELEVARLQLQGLDLSSRSLLGIDTEDAIQGRNESCDISKE	985	Db
961	EMDVLDGLKMEATEVEKLFGRALPIRKIMAVATH-	923	Qy
œ	QSLEKLEEKMESQGIMKNKEIQELEQLLSSERQELDCLRKQYLSENEQWQQKLTS	929	DЬ
922	RTIIKEVEEIEEEVEKVR	874	Qy
928	EQTGDMSLLSNLEGAVSANQCSVDEVFCSSLQEENLTF	869	Дb
7	PESIIPEIQTAAQKVGRDFNTFIKTDNTCGPEPPLVERLEKKV	827	Qy
on .	KAENLVLSTNLRNFQGDLVKEMQLGLEEGLVPSLSSSCVPDSSSLSSLGDSSFYRAL	811	Дb
826	DWYILSSKVENSPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVL	784	Qy

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Matches 124; Conserv
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          proteins have immunomodulatory activity. The nucleic acids and proteins can be used to identify activated T-cells in a sample population. They can also be used to isolate and identify sequences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        encoding other proteins or other compounds having immunomodulatory
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          activity
Homo sapiens
W09727284-A2
                                 central nervous system
                                                   Human RAD50: DNA repair; tumour suppression; cancer; Septin-2;
                                                                                                             W22775
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      450
                                                                                         21-DEC-1998 (first entry)
                                                                                                                             W22775 standard; Protein; 1312
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                                                                                                                                                                                                                          875 LQISTNLQRRQQLEEQTVELSTEVQSLY 902
                                                                                                                                                                                                                                                                  924 MDVLDGLKME---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            783
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -----HTTTRTQMEMLTKDKADKDEQIRKIKSRHSDELTSLLGYF----PNKKQLEDWL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              YVGSKLPGHKRFSWGWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGK 551
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ---LSKKQ----NELKNVKYELQQLEGSSDRILELDQELIKAERELSKAEKNSNVETLKM 502
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VRELSKEEKEILNELQMEATEVEKLFGRALPIRKLRMALAPHSNFL-----ANHETIKY 491
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                                                                                                                                                                                                                                                                                                                                                                               NVNRDIQR-LKNDIEEQETLLGTIMPEEESAKVCLTDVTIMERFQMELKDVERKIAQQAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DDWYILSSKVENSPEDYIFV--YYKGRNDAWDGYGGSVLYTRSAV-LPESIIPELQTAAQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FITQL----TDENQSCCPVCQRV-----FQTEAELQEVISD--
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                                                                                                                                                                                                                                                                                                  KLQGIDLDRTVQQVNQEKQEKQHKLDTVSSKIELNRKLIQDQQEQIQHLKSTTNELKSEK
                                                                                                                                                                                                                                                                                                                                         -----VEEIEEEVEKVRDKEVTLFSKLFEGFKELQRDEENF----LRELSKEE
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                                                                                                                                                                                                                                                              -ATEVEKLF 941
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Pred. No. 0.073;
Pred. Mismatches 218;
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                                                                                                                                                                                                                                                                                                                                                                                                                   ----NTCGPEPPLVERLEKKVEEGERTIIKE--
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Best Local Similarity 19.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               31-JUL-1997.
24-JAN-1997;
17-JUL-1996;
26-JAN-1996;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   anaemia with excess blasts. Also disclosed in this invention is Human septim-2 homologues of which may be used as targets for cancer therapies and central nervous system directed treatment methods, and to measure the proliferative potential of selected cell types.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Claim 5; Page 82-86; 195pp; English.
The human RAD50 (hRAD50) is involved in DNA repair and has tumour suppression activity, can be used to detect predisposition to, decrether risk of or treat cancers, e.g. acute myeloid leukaemia, myelodysplastic syndrome, therapy related myelodysplastic syndrome, therapy related myelodysplastic syndrome, therapy related myelodysplastic syndrome.
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LQISTNLQRRQCLEEQTVELSTEVQSLY
                                                                                                                                                                                        KVGRDFNTFIKTD-----
                                                                                                                                                                                                                           ----LQSKLR'APDKLKSTESELKKKEKRRDEMLGLVPMRQSIIDLKEKEIPELRNKLQ
                                                                                                                                                                                                                                                                                                       FITQL----TEBNQSCCPVCQRV-----FQTEAELQEVISD-----
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                                                                                                                                                                                                                                                                                                                                                                                                                 NSVVDEFNECAVSRKKCVPRKSDVGDFPVPDPSVLVQKFDMKDFSGKWFITRGLNPTFDA 722
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                                                                                                                                                NVNRDIQR-LKNDIEEQETLLGTIMPEEESAKVCLTDVTIMERFQMELKDVERKIAQQAA
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                                                                     KLQGIDLDRTVQQVNQEKQEKQHKLDTVSSKIELNRKLIQDQQEQIQHLKSTTNELKSEK
                                                                                                            --------VUSIEEEVEKVRDKEVTLFSKLFEGFKELQRDEENF-----LRELSKEE 923
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    tumour suppressor gene RAD50 - useful to detect
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; US-592126.
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902
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Determining effect on signalling pathways in live cells from PT redistribution of luminophores - specifically fusions of green PT fluorescent protein with a signalling component, and new apparatus, PT particularly for identifying toxins and potential therapeutic agents PT particularly for identifying toxins and potential therapeutic agents PT particularly for identifying toxins and potential therapeutic agents PT particularly for identifying toxins and potential therapeutic agents PT particularly for identifying toxins and potential therapeutic agents PT particularly in product. The fusion protein is used in an assay CC that exemplifies the invention. The specification describes how CC quantitative information about the influence of a molecule on a cellular cresponse is obtained by recording the variation, caused by the molecule, CC on mechanically intact living cells, in the spatially distributed light CC emission is processed to provide information that correlates spatial CC distribution to the degree of the molecule. The method is used to consist that (in)directly affect intracellular signalling, especially to screen for potential therapeutic agents or toxins, and the information that correlates patial consistent in the capacity of the molecule. The method is used to the information that correlates spatial consistent in the capacity of the molecule. The method is used to the information that correlates spatial consistent in the capacity of the molecule of the molecule. The method is used to the information that correlates spatial consistent in the capacity of the molecule. The method is used to the information that correlates spatial consistent in the capacity of the molecule. The method is used to the information that correlates spatial consistent in the capacity of the molecule of the m
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intracellular signalling; chimera.
Chimeric - Aequorea victoria.
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                                                                                                       SRPLSAFRSGFSKGIFDI ----VPLPSKNEL---KELTAPLLLKLVGV-----LACAFLI
                                                                                                                                                              LG-FSDGQEARPEEIGWLNGYNETTGERGDFPGTYVEYIGRKKISPP-
                                                                                                                                                                                                               THCFTSPCHDRIRFFSSDDGIGRLGITRKRINGTFL----LKILPPIQSADLRTTGGRS
                                                                                                                                                                                                                                                                                                                             FSKLFEGFKELQRDEENFLRELSKEEMD---VLDGLKMEATEVEKLFGRALPIRKLMAVA.954
                                                PRPLPV-APGSSKTEADVEQQALTLPDLAEQFAPPDIAPPLLIKLVEAIEKKGLECSTLY 394
                                                                                                                                                                                                                                                                                                                                                                                                                                       AQKVGRDFNTFIKTDNTCGPEPPLVERLEKKVEEGERTIIKEVEEIEEEVEKVRDKEVTL 897
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NVYIMADKQKNG----IKVNFKIRHNIED---GSVQLADHYQQNTPIGDGPVLLPD----
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                                                                                                                                                                                                                                                                      -GMDELYK----SGLRSMSAEGYQYRALYDYKKEREEDIDLHLGDILTVNKGSLVA
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-VPSAD-----AVDALKTCACLLKGCRIE----
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 135; DB 1; Length 968; Pred. No. 0.05;
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                               This sequence represents a modified Plasmodium falciparum gp190/MSP-1 (merozoite surface) protein. The gene encoding this protein has been stabilised by reducing the AT content of the nucleotide sequence. Such a protein is useful in vaccines against malaria or for producing monoclonal antibodies (for passive immunisation). The complete gp190 protein can now be produced outside the parasite and has, at least over extended regions, the native pattern of folding. Larger amounts of the protein can be produced recombinantly than would be possible using the parasites as
                                                                                                                                                                                                                                     Recombinant production of complete gp190/MSP-1 Plasmodium surface protein - useful in anti-malaria vaccines, also stabilising genes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             gp190; malaria; MSP-1; merozoite surface protein; stability; vaccine;
monoclonal antibody; passive immunisation; parasite.
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Sequence
                                                                                                                                                                                               reducing their AT content Example 1; Fig 3¢; 48pp; German.
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N-PSDB; V21451, V
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Bujard H, Pan W, Tolle R;
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02-OCT-1997; E05441
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            falciparum synthetic gp190 protein.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RI----REIDKRMNSIKPDL
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DQVVKEDNIEAVGKKLHEY - -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DWYILSSKIE-;-NKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELEKAAKS 1297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               KLI-----KIFHRDGKYGFSDPLTFSSVVELINHYRNESLAQYNPKLDVKLLYPVSKYQQ 677
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NNGMNNNMSLQNAEWYWGDISREEVNEKLRDTADGTFLVRDASTKMHGDYTLTLRKGGNN
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1639
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Query Match
Best Local Sim
Matches 246;

Similarity

1.8%; 18.0%;

Score 134; DB Pred. No. 0.14;

Length 1639; Indels 444;

Mismatches 473; DB 1;

Gaps

70;

Conservative 207;

1107 TECQIKCGDLFENSVVDEFNECAVSRKKCVPRKSDLGEFPAPDPSVLVQNFNISDFNGKW 1166	Qγ
1071IAETENTLENTKILLKHYKGLVKYYNGESSPLKTLSEESIQTEDNYASL 1119	Db
1049 GVLACAFLIVPSADAVDALKTCACLLKGCRIELAKCIANPACAANVACLQTCNNRPDE 1106	Qy
1039 KEQLESKLNSLNNPKHYLQNFSVFFNKKKEAE 1071	Дb
992 KILPPIQSADLRTTGGRSSRPLSAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKLV 1048	Qy
990 LE-EDINKLKKTLQLSFDLYNKYKLKLERLFDKKKTVGKYKMQIKKLTLL 1038	ФФ
EATEVEKLFGRALP	Qy
937 NIYQELIGQKSSENFYEKILKDSDTFYNESFTNFVKSKADDINSLNDESKRKK 989	Db
884EEEVEKVRDKEVTLFSKLFEGFKELQRDEENFLRELSKEEMDVLDGLK 931	Qy
881 KVSTSVKTLSSSSMQPLSLTPQDKPEVSANDDTSHSTNLNNSLKLFENILSLGKNK 936	рb
840 KVGRDFNTFIKTDNTCGPEP-PLVERLEKKVEEGERTIIKEVEEI 884	Qy
825 LLFNIQNNIPVMYSMFDSLNNSLSQLFMEIYEKEMVCNLYKLKDNDKIKNLLEEAK 880	Db
799 YIFPYYKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQ 839	·Qγ
	Db
LYQDDWYILSS	Qy
757 TPPAPVNNKTENVSKLDYLEKLYEFLNTSYIC 788	Дb
	Qy
706 EGEITGQATTKPGQQAGSALEGDSVQAQAQEQKQAQPPVPVPVPPEAKAQVP 756	Db
CGDLFENSV	Qy
646 NIHVPNSYKQENKQEPYYLIVLKKEIDKLKVFMPKVESLINEEKKNIKTEGQSDNSEPST 705	дb
625NVACLQTCNNRPDET 651	Qy
596 KITKDENKPDEKILEVSDIVKVQVQKVLLMNKIDELKKTQLILKNVELKH 645	ДĎ
572KFPKDVALMVWEKWGOFAKTAIVAIFILSVASKADAVDALKTCTCLLKECRLE- 625	Qy
559 VVEKELKYYKNLISKIENEIETLVENIKKDEEQLEEK 595	Db
515 VVAKICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGKHNLSPAHSINQNVPKGNSGC 572	Qy
508 NFEKMMGKRYSYKVEKLTHHNTFASYENSKHNL-EKLTKALKYMEDYSLRNI 558	Дb
ALPIRKLRMAL	Qy
IXIEKKKI	Db ·
405 VEKEVEKVRDTEMTLFORLLEGFKELQQDEENFVRELSKEEKEILNELQMEAT 457	0γ
404 PNGVTYPLSY-NDINNALNELNSEGDLINPFDYTKEPSKNIYTDNERKKFINEIKEK 459	Db
350 PNLQKAAKSVGRDFNNFITTDNSCGPEPPLVERLEKTAEEGEKLLIKEAVEIEEE 404	Оy
347 IEEHEKEIKEIAKTIKFNIDSLFTDPLELEYYLREKNKNIDISAKVETKESTEPNE-Y 403	Дb
296 FLHYQDDWYILSSQIENKPDDYIFVYYRGRNDAWDGYGGSVIYTRSPTLPESII 349	Qy
291 QLEEAHNLISVLEKRIDTLKKNENIKELLDKINEIKNPPPANSGNTPNTLLDKNKK 346	Дb
QDP	Qy
IENINELIEESKKTIDKNKNATKEEEKKKLYQAQYDLSIYNK	Db .
184 VDQFNECAVSRKKCVPRKSDVGEFPVPDRNAVVQNFNMKDFSGKWYITSGLNPTFDAFDC 243	Q _V

	EINLSLEELKDQRMLSRYEKWEKI	Db	
	879	Qy	
	177 IKNASDSDGQDLLFTNQLKEHPTDFSVEFLEQNSNEVQEVFAKAFAYYIEPQHRDVLQLY 236	Db	
	TCGPEPPLVERLEKKVEEG	VQ	
	129 LVIQSSEDYVENTEKALN	Db	
	/KGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQ	Qy	
	72 EMYKAIGGKIYIVDGDITKHISLEALSEDKKKIKDIYGKDALLHEHYVYAKEGYEPV 128	Db	
	GNLSWRIRTPDGGFFTRSAVQKFV	Qy	
ω	uery Match 1.8%; Score 132; DB 1; Length 776; est Local Similarity 17.2%; Pred. No. 0.061; Length 276; Gaps atches 139; Conservative 117; Mismatches 254; Indels 300; Gaps	z w o	
	uence 776 AA;	SQ	
	ling of tumour cells or the killing of cells ellular pathogens, especially HIV.	888	
	native anthrax lethal factor and a sequence encoding an ac	38	
	d in the construction of a nucleic acid which encodes a fusion tein comprising the anthrax protective antigen binding domain o	88	
	5-77; 124pp; English. ing the lethal factor of Bacillus anthracis ma	Sd Sd	
	118	I.d.	
	notting toxic to specific cells	g P S	
		DR DR	
	(USSH.) US DEPT HEALTH & HUMAN SERVICES. Arora N, Klimpei K, Leppla SH, Nichols PJ, Singh Y;	Iđ	
	2849.	PR	
	160 160	r r	
	18-AUG-1994.	g r U	
	•	SO	
	; human immunodeficiency virus; toxin.	X V	
	anthracis; fusion protein; lethal factor;	KW	
	acillus anthracis.	DE	
	T Antry	R A	
	UUT 11 178 R60178 standard; Protein; 776 AA.	RESU R601 ID	
) I LNSRENKRENFKNVLES	Db	
	EEVEKEVEKVGRTEMTLFQRLAEGFNELKQDEENFVRELSKEEME	Qy	
	SVINEYEVLY	DЪ	
	PNSTIPELEKAAKSIGRDFSTFIRTDNTCGPEPALVE	Qy	
	KKPASTHVGAES	Дb	
	EYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDA-WDGYGGAVVY	Qy	
	SENTDVNNALESYK-	Дb	
	GLNPTFDAFDCQLHEFHTEGDNKLVGNISWRIKTLDSG	Qy	
	1120 ENFKVLSKLEGKLKDNINLEKKKLSYLSSGLHHLIA-ELKEVIKNKNY 1167	ф	

REWOODDDDDD	PN PD PR PR PR	OXXXXXXXX DD ACO	SO .	Qy Db	dy Oy	ОУ ОУ ОУ	Оу	gg Qy	Оy	Qy Db	Qy Db
N-PSD Centr Claim The p of Xe motor micro movem of ch cell thera	W09913061 18-MAR-19 10-SEP-19 11-SEP-19 (REGC) U Cleveland	632 Y01632 Y01632 22-JUN Amino CENP-E plus el microti cell plis el niflam restent insect		1338 637	1281 585	1165 511 1223 534	1110 459	1050	1007 397	951 357	908 297
226819. e-associ prage 66- prage 66- in seque is. The p ivity, A ile bindi toward m toward m somes du siferatio	A1. A1. 199. 199. U1923 197; US-05 INIV CALIF LDW, GOLD	32 standard; Protein; 2954 AA. 182; N-1999 (first entry) n-1999 (first entry) n-1999 acid sequence of centromere-associated protein-E (CENP-E). 19: centromere-associated protein-E; ATPase activity; end-directed microtubule motor activity; chromosome congression; tubule binding activity; chromosome movement; mitosis; proliferation; tumor; metastasis; vascular malfunction; mosis; fungal infection; selective herbicide; fungicide; enosis; fungal infection; selective herbicide; fungicide; ticide; plant growth regulator; activator; cancer cell marker.	LSKEEMEFLDEIKMEASEV 1398 AGYLLDKNQSDLVTNSKKFIDIFKEEGSNL 725	EEIEBEVEKEVEKVGRTEMTLFQRLABGFNELKQDEENFVRB 1380 : :	ELEKAAKSIGRDESTFIRTDNTCGPEPALVERIEKTVEEGE-RIIVKEV 13 : ::	KWYITSGLNPTFDAFDCQLHEFHTEGDNKLVGNISWRIKTLDSGFFTRSAVQKFVQDP 1222	QIKCGDLFENSVVDEFNECAVSRKKCVPRKSDLGEFPAPDDSVLVQNFNISDFNG 1164	VLACAFLIVPSADAVDALKTCACLLKGCRIBLAKCIANPACAANVACLQTCNNRPDETEC 1109	GRSSRPLSAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKLVG 1049	MAVATHGETSPCHDRIRFESSDDGIGRLGITRKRINGTELLKILPPIQSADLRTTG 1006 : : : :	LQRDEENFLRELSKEEMDVLDGLKMEATEVEKLFGRALPIRKL 950 :: :::

diagnostic marker for dividing cells, inc prowth regulators or activators for improv diagnostic marker for dividing cells, inc property in the property of dividing cells, inc property inc	ENLKGTMESV	ALPI	Db 1009 IIMQEQSEQI	EEE	950 EKALEEKNA-	Ov 839 OKVGRDENTEIKTD	Db 920 LNGLLAGKV	- S	Db 884 AASLFEKQLETEKSNYKKME	Qy 719 TFDAFDCQLHEFHT	Db 837 FQLKQSLSDAEAVTRDAQKEC	Qy 661 FENSVVDEFNEC	Db 793 TKLLKEQEIQLAE-	Qy 615 TCLLKECRLELAKC	Db 776 ENAEMYNQNLE	/PKG	Db 736	Qy 508 EDYFGSIVVAKICS	Db 692 MESIQLCEAIMAEK	QM-EATEVE	Db 632 ASNSDLQDSSVDGF	Оу 421	Db 575 SFELKIAELEEQLSVKA	Qy 382 RLE-KTAEEGEKLL	Db 540SGI	Qy 322 YRGRNDAWDGYGGS	503 REKT;S	Qy 262 RIKTLDGGFFTRSA	Db 459 SDMPSFPEID-DS1	_ 뜀	Query Match Best Local Similarity Matches 260; Conserv	E is	C plant-protection a
	KHELEETIRDKEQLLHEKKYFFQAMQTIFFI	CFTSPCHDRIRFFSSDDGIGRLGITRKRIN	SKVQQTEEQYL-EMKKMHDDLFEKYIRNKSEAEDL	LFSKLFEGFKELQRDEENFLRELSKEEMDVLDGLKMEA	LSEYKFLPNEVECLKNQISKASEEIMLLKQEGEHSASIISKQE	GP=091.VEX.TEXXV	PRDLL	FVYYKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAA	ADLAFNEIN-Y	VGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHDNE	: : : : 	AVSRKKCVPRKSDVGDFPVPDPSVLVQKFDMKDFSGKWFITRGLN	:::: :::: :::	ISNPACAANVACLQTCNNRPDETECQIK	EDEE	CKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKA	LERSLKENQETNEFEILEKETQKEHEAQLIHEIGS	SRRIPRYFRKSPRICCGLDSRGLQLFSHGKHNLSPAHSI	ANALEELALMRDNFDNIILENETLKREIAD	FGRALPIRKLRMALAPHSNFLANHETIKYYVGSKLPGHKRFSWG	SSSHDECIEHRKMLEQKIVDLEEFIENLNKKSENDKQKSSEQD	LEGFKELQQDEENFVRELSKEEKE	KNLEMVTNSREHSINAEVQTDVEKEVVRKEMSVLGU	IKEAVEIEEEVEKEVEKVRDTEMTLF	<pre>#</pre>	VIYTRSPTLPESIIPNLQKAAKSVGRDFNNFITTDNSCGPEPPLV	KENQLQYLPKD-	VQTFVQDPDLPGALYNHDNEFLHYQDDWYILSSQIENKPDDY		AFDCQLH	1.7%; Score 129.5; DB 1; Length 2954; 19.0%; Pred. No. 0.77; ative 190; Mismatches 441; Indels 479; G	lso a diagnostic marker for dividing cells,	ents (selective herbicides, fungicides and ents (selective herbicides, fungicides and lant growth regulators or activators for income

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                                                                       Matches
                                                                                       Query Match
Best Local Similarity
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                                                                                                                                                                          Claim 6; Fig 1; 51pp; English.
The sequence encoding the P195 protein of Plasmodium falciparum (N50330) and a peptide comprising at least one of its epitopes (see P50777) are claimed. Also claimed is a vaccine for inducing immunity to malaria comprising the novel peptide or P195 or a peptide comprising at least one epitope when derived from the new DNA sequence, together with a carrier.
                                                                                                                                                                                                                                                                                                                                                                                                                                22-FEB-1984; GB-004692.
26-SEP-1984; GB-024340.
21-FEB-1985; GB-004429.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EP-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Plasmodium falciparum
                                                                                                                                                                                                                                                                                                                                             Cloned DNA sequence encoding plasmodium falciparum protein
                                                                                                                                                                                                                                                                                                                                                                N-PSDB; N50530
                                                                                                                                                                                                                                                                                                                                                                                              (WELL ) WELLCOME FOUNDATION LTD.
HOLder A, Sandhu J, Odink K, Lockyer M, Riveros-Moreno V;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         21-FEB-1985; 301173
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Malaria vaccine; epitope; antigen; immunogen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence of the P195 protein of Plasmodium falciparum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     30-SEP-1991
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         P50777 standard; Protein;
                                                                                                                                                                                                                                                                                                                          useful for expressing the protein for use in vaccines
249
                                  184 VDQFNECAVSRKKCVPRKSDVGEFPVPDRNAVVQNFNMKDFSGKWYITSGLNPTFDAFDC 243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FDI-VPLPS-----
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           -TPLSDSLPPSKLVE-----GNSQDPIEINDYHNLIALATERNNIMVCLETERNSLKEQV 1169
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EVTEKLQTLQEEMKNITIERNE-------LQT-NFEDLKAEHDSLKQDLSENIE
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EIEEEVEKEV--EKVGRTEMTLFQRLAEGFNELKQDEENFVRELSKEEME 1386
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DEIEVLKAQLKAAEERLEIKDRDYFELVQTANTNLVEGKLETPLQADHEE-----DSID
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LEKEILGKSEESEVLKSMLENLKED----NNKLKEQAEEYSSKENQFSLEEVFSGSQKLV
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 IENINELIEESKKTIDK-----
                                                                                                                                                                 1654
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                                                                       Conservative
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17.5%;
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                                                                         214;
                                                                                         Score 129; DB Pred. No. 0.34;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AA
                                                                         Mismatches 499;
 -NKNATKEEEKKKLYQAQYDLS----
                                                                                                          DB 1;
                                                                                                          Length 1654;
                                                                         Indels 408;
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                                                                                                                                                                                                                                                                                                                                                                                                                              PLSLTPQDKPESSANDDTSHSTNLNNSLKLFENILSLGKNKNIYQELIGQKSSENFYEKI
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                                                                                                                                                                                            NPKHVLQNFSVFFNK-----KKEAE--
                                                                                                                                                                                                                                 RP---LSAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKLVGVLACAFLIVPSADAVDAL 1067
                                      EKKKLSYLSRGLHHLIAELKEVIKNKNYTGNSPS-----VNNTDV------N
                                                                           DEFNECAVSR-----KKCVPRKSDLGEFPAPDPSVLVQNFNISDFNGKWYITSGLN 1173
                                                                                                               ENTKILLKHYKGLVKYYNGESSPLKTLSEESIQTEDNYASLENFKVLSKLEGKLKDNLNL 1152
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Making cell which expresses nisin but does not contain natural nish gene - by providing cell with variant nish gene, and genes for nisin modification, secretion and immunity produces for secretion and immunity.

PT modification, secretion and immunity produces for nisin produces for nish gene coding for pre-nisin A (R95267, see lactic includes the nish gene coding for pre-nisin A (R95267, see also R95263) and the genes for nisin modification, secretion and immunity. nish (R95269) and nisc (R95270) are believed to be immunity. nish (R95269) and nisc (R95270) are believed to be involved in reactions that modify pre-nisin; nish (R95269) is similar to a transport ATPase and is involved in translocation of nisin out of the cell; nisl (R95271) is involved in immunity to nish. Replacement of the natural, chromosomal copy of the nish gene with a variant nish gene allows prodn. of high levels of nisin a variant nish gene allows prodn.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Dodd HM,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1194
          392 R----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (BIOT-) BIOTECHNOLOGY & BIOLOGICAL SCI RES COUNC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        20-NOV-1995;
19-NOV-1994;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Pre-nisin modification gene nisB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           01-AUG-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 R95268;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            R95268 standard; Protein; 993 AA
                                                                                                                                                                                                       405 VEKE------VEKVRDTEMTL---FQRLLEGFKE-------
                                                                                                                                                                                                                                                                                   350 PNIQKAAKSVGRDF--NNFITTDNSCGPEPPLV---ERLEKTAEEGEKLLIKEAVEIEEE 404
                                                                                                                                                                                                                                                                                                                             171 IKYTNYYQIISEFCENDYQKYEDICETYTLCYGDEYRELSEQYLGSLI-----VNHYLI 224
                                                                                                                                                                                                                                                                                                                                                                    297 LHYQDDWYILSSQIENKPDDY-----IFVYYRGRNDAWDGYGGSVIYTRSPTLPESII 349
                                                                                                                                                                                                                                                                                                                                                                                                                                           ocal
                                    LPGHKRFSWGWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGKHNLSP 556
                                                                            FIEKYGVDQEVQITEL-----FDSTFGIGAPYNYNH----PRNDFYESEPSTLYYSEEE
                                                                                                                     FVRELSKEEKEILNELQMEATEVEKLFGRALPIRKLRMALAPHSNFLANHETIKYYVGSK 496
                                                                                                                                                            IYQEMSQILENDNYIQIDLISDSEINFDVKQKQQLEHLAEFLGNTTKSVRRTYLDDYKDK 341
                                                                                                                                                                                                                                              SNLQKDLLS---DFSWNTFLTKVEAIDEDKKYIIPLKKVQKFIQEYSEIEIGEGIEKLKE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       VGRTEMTLFQRLAEGFNELKQDEENFVRELSKEEMEFLD 1389
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DNEYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDA-WDGYGGAVVYTRSSVLPNSIIPE 1290
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NALESY ---- KKFLPEGTD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               --NNVMTFNVNVKDILNSRFNKRENFKNVLESDLIPYKD 1352
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LEKAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGERIIVKEVEEIEEEVEKEVEK 1350
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          -STHVGAESNTITTSQNVDDEVDDVIIVLIFGESEEDYDDLGQVVT---GEAVTTSVI--
                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gasson MJ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            993 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GB-023404
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (first entry)
        --EKYLSMYVEA--
                                                                                                                                                                                                                                                                                                                                                                                                                                   1.7%; Score 129; DB 1; Length 993; 18.8%; Pred. No. 0.15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           --DN-----ILSKIE---NEYEVLYLKPLAGVYRSLKKQLE- 1316
                                                                                                                                                                                                                                                                                                                                                                                                                      99;
                                                                                                                                                                                                                                                                                                                                                                                                             Pred. No. 0.15
9; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ----VATVVSESGSDTLEQSQ-----PKKPA-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 product.
                                                                                                                                                                                                                                                                                                                                                                                                                    244;
                                                                                                                                                                                                                                                                                                                                                                                                                 Indels 196;
-VKNHNVINLDD 413
                                                                                                                                                                                                       -LQQDEEN 436
                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                391
                                                                                                                                                                                                                                                                                                                                                                                                               28;
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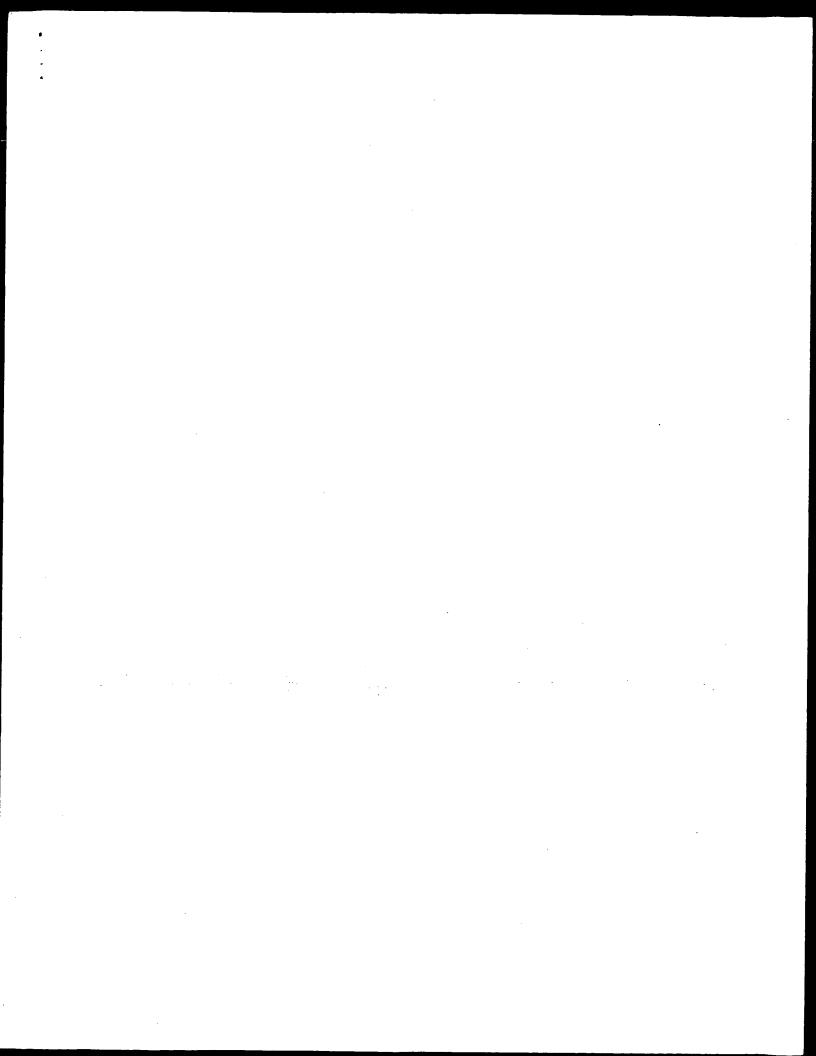
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R77087
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                                                                                                                                                                        Query Match
Best Local Similarity
                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                            Sulphonyl:urea receptors and corresp. nucleic acids - used in detecting persistent hyperinsulinaemic hypoglycaemia of infancy Disclosure; Page 99-104; 145pp: English.

Rat sulphonylurea receptor (SUR) DNA was ligated into eukaryotic expression vectors containing the SV40 virus promoter and used to transfect COS cells. Expression of the receptor was low when SUR cDNA (T01551) was used; but high when the genomic SUR sequence (T01568) was used; the product had the sequence given
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Rat sulphonylurea receptor.

Persistent hyperinsulinaemic hypoglycaemia of infancy;
sulphonylurea receptor; diabetes; COS.
                                                                                                                                                                                                                                                                                                                                                                                                                                             N-PSDB; T01568
                                                                                                                                                                                                                                                                                                                                                                                                                                                          WPI; 95-373758/48.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Bryan LA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (BAYU ) BAYLOR COLLEGE MEDICINE. (TEXA ) UNIV TEXAS SYSTEM.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   12-APR-1995; U04463.
13-APR-1994; US-226972.
15-MAR-1995; US-404531.
529 EMTSLRAFAVYTSISIFMNTAIPIAAVLITFV------GHVSFFKESDFSPSVAFASL
                                     926 VLDGLKMEA--TEVEKLFGRALPIRKLMAVATHCFTSPCHDRIRFFSSDD-----GIGRL
                                                                                                           868 KVEEGERTIIKEVEEIEEEVEKVRDKEVTLFSKLFEGFK--ELQRDEENFLRELSKEEMD 925
                                                                                                                                                                                                                                                                        in R77087
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           WO9528411-A1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         R77087 standard; Protein; 1582 AA R77087;
                                                                          480 KLSQAQRTTL -----EYSNERLKQT---NEMLRGIKLLKLYAWENIFCSRVEKTRRK 528
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     31-JAN-1996 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        624
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                566
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              414 LESHYQKM-----DLEKKSELQGLELFLNLAKEYEKDIFILGDIVGNNNLGGASGRFS 466
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       728 RREK 731
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          864 RLEK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            666
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               557 AHSINQNVPKGNSGCKEPKDVALMVWEKWGQFAKTAIVAIFIL-----SVASKADAVD 609
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VDEFNECAVSRKKCVPRKSDVGDFPVPDPSVLV-----QKFDMKDFSG----KWFITRGL 716
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FEDENIINKGEKGRV------ADVVVPFIRTRA--LGNEGRAFIREKRVS------VE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         YKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDFNTFIKTDNTCGPEPPLVE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ---SAVQKFVQDPKYPGILY--NHDNEYLLYQD---DWYILSSKVENSPEDYIFV----Y
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NKTLFSNELRFLYEISLDDK--FGNLPWELIYRDFDYIPRLVFDEIVISPAKWKIWGRDV 623
                                                                                                                                                            109;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NSKMTIRELIQSKEIPKEFYIVNGDNKVYLSQENPLDMEILESAIKKSSKRKDFIELQEY 683
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NPTFDAFDCQ-LHEFHTEENKLVGNLSWRIRTPDGGFFTR-----------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               HANVMHTSIMRRKVLPFFTSTSHNEVLLTNIYIGIDEKEKFYARDISTQEVLKFYITSMY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ALKTCTCLLKECRLELAKCISNPACAAN----VACLQTCNNRPDETECQIKCGDLFENSV 665
                                                                                                                                                                                                                                                    1582 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Cote GJ,
                                                                                                                                                          Conservative
                                                                                                                                                                          1.7%;
18.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gagel RF, Nelson DA, Thomas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ---SPELTSYHRTIVDSVERENENKEITSCEIVF--LPENIR 505
                                                                                                                                                    72;
                                                                                                                                                 Score 124; DB 1; L
Pred. No. 0.79;
'2; Mismatches 221;
                                                                                                                                                                                      DB 1; Length 1582;
                                                                                                                                                      Indels 178;
                                                                                                                                                 Gaps
                                                                                                                                                    26;
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pb qq	ДУ	pg Qy	Qy db	ду	Ф	g Qy	Dy Db
1308 947	1248	1205 846	1163 794	1118 739	1077 685	1024 637	979 581
308 TUNIGEEPANEKIEKIVEEGEKIIYAANEELEEPAA 1347 	KIENKPEDYIFYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELERAKSIGRDFSTFIR 130 DGTIQREGTLKDFQRSECQLFEHWKTLMNRQDQELEKETVME 946	LDSGFFTRSAVQKFVQDPNQPGVLYNHDNEYLHYQDDWYILSS 1247	NGKWYITSGLNPTFDAFDCQLHEFHTEGDNKLVGNISWRIKT 1205	ENSVVDEFNECAVSRKKCVPRKSDLGEFPAPDPSVLVQNFNI-SDF 1162	CRIELAKCIANPACAANVACLQTCNNRPDETECQIKCGDLF 1117	IFDIVPLPSKNELKELTAPLLLKLVGVLACAFLIVPSADAVDALKTCACLLKG 1076 :	GITRKRINGTELLKILPPIQSADLRTTGGRSSRPLSAFRSGESKG 1023

Search completed: October 14, 1999, 03:56:38 Job time: 2721 sec



GenCore version 4.5 Copyright (c) 1993 - 1998 Compugen Ltd.

OM protein - protein search, using sw model

Run on: October 14, 1999, 03:19:31 ; Search time 33.23 Seconds (without alignments) 1702.452 Million cell updates/sec

Title:
Perfect score:
Sequence: US-09-075-375-6
7495
1 MALSLHTVFLCKEEALNLYA.....MEASEVEKLFGKALPIRKVR 1412

Scoring table: BLOSUM62

Searched: 122810 seqs, 40065486 residues

Database : PIR_60:*
1: pir1:
2: pir2:
3: pir3:
4: pir4:

pir1:*
pir2:*
pir3:*
pir4:*

pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

39	a R	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	ω	7	o	₅	4	ω	2		No.	Result
128	128	129	129	129	129		29.	ω		131	ω		ω	٠	134	w		w	ω	137	13		39	14		4		142.5	143.5	14	144.5	4	146	15	155.5	55.	43	55	Score	
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624	90	1	8	7	20	\sim	99	67	63	15	809	15	~	93	~	63	93	9		6			20	9	30	8	81	1935	S	16	8	74	w	46	82	8	σ	~	Length	
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C600	ω	7119	4484	C35815	581		47:	483	AZC	69	2	703	7162	4815	7038	0560	3805	0204	4080	7	4374	3817	ū	6	G	7	7.	σ	7	7	5	5	ω	36	63	5	2	03	ID	
urface	isB protein -	le chr	K12H4.8 protein -	in heavy	in heavy	thetical pro	in heavy	etical pro	merozoi	some segreg	anthrax toxin leth	semb	hypothetical prote	beta-myosin heavy		r merozoite s	sin heavy	hin, mus		le centro	<u>a</u> b1	myosin-like protei	e memk	hetical pr	ce-l	rite red	island p	a heav	SA-H3 antigen P	pothetical p	oisomerase	ear migr	-	othetic	reticulocyte-bindi	NTPase	probable violaxant	violaxanthin de-ep	Description	

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421 EVTLFSKLFEGYKELQRDEENFLRELSKEEMDVLDGLKMEATEVEKLFGRALPIRKL 477

4.	4.	43	4.	4	4(
		3 126.5			
1.7	1.7	1.7	1.7	1.7	1.7
993	1640	1282	2628	1790	4910
2	N	N	N	N	Ν
C48951	A24594	JE0120	S59413	S67593	S64942
nisB protein - Lac	probable major sur	glycoprotein A - m	probable membrane	transport protein	probable membrane

ALIGNMENTS

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C:Species: Archaeoglobus fulgidus
C:Dec-1997 #text_change 05-Jun-1998
C:Date: 05-Dec-1997 #sequence_revision 05-Dec-1997 #text_change 05-Jun-1998
C:Accession: H69378
R:Klenk, H.P.; Clayton, R.A.; Tomb, J.F.; White, O.; Nelson, K.E.; Ketchum, K.A.; Flelschmann, R.D.; Quackenbush, J.; Lee, N.H.; Sutton, G.G.; Gill, S.; Kirkness Glodek, A.; Zhou, L.; Overbeek, R.; Gocayne, J.D.; Weidman, J.F.; McDonald, L. Nature 390, 364-370, 1997
A;Authors: Utterback, T.; Cotton, M.D.; Spriggs, T.; Artiach, P.; Kaine, B.P.; Sykes, S. Smith, H.O.; Woese, C.R.; Venter, J.C.
A;Title: The complete genome sequence of the hyperthermophilic, sulfate-reducing archaed
                                                                                                                                                                                                                                                   purine NTPase homolog - Archaeoglobus fulgidus
C:Species: Archaeoglobus f
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A; Map position: I
A; Introns: 72/3; 128/2; 160/3; 292/2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A;Status: preliminary; translated from GB/EMBL/DDBJA;Molecule type: DNAA;Residues: 1-462 <SHI>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         submitted to the EMBL Data Library, April 1998 A;Description: Genomic sequence for Arabidopsis thaliana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  probable violaxanthin de-epoxidase precursor - Arabidopsis thaliana
N;Alternate names: protein F22013.3
C;Species: Arabidopsis thaliana (mouse-ear cress)
C;Date: 12-Feb-1999 #sequence_revision 12-Feb-1999 #text_change 12-Feb-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A:Cross-references: EMBL:AC003981; NID:g3063438; PID:g3063441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A; Reference number: Z14200
A; Accession: T00708
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches 462;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Genetics
                                                                                                                                                                                                                                                                                                                                                                                                                                                      1371 QDEENEVRELSKEEMEFLDEIKMEASEVEKLFGKALPIRKVR 1412
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                                                                                                                                                                                                                                                                                                                                                                                                       421 QDEENFVRELSKEEMEFLDEIKMEASEVEKLFGKALPIRKVR 462
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DNKLVGNISWRIKTLDSGFETRSAVQKFVQDPNQPGVLYNHDNEYLHYQDDWYILSSKIE 1250
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TCGPEPALVERIEKTVEEGERIIVKEVEEIEEEVEKEVEKVGRTEMTLFQRLAEGFNELK 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TCGPEPALVERIEKTVEEGERIIVKEVEEIEEEVEKEVEKVGRTEMTLFORLAEGFNELK 1370
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELEKAAKSIGRDFSTFIRTDN 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELEKAAKSIGRDFSTFIRTDN 1310
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SRKKCVPRKSDLGEFPAPDPSVLVQNFNISDFNGKWYITSGLNPTFDAFDCQLHEFHTEG 1190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DNKLVGNISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLYNHDNEYLHYQDDWYILSSKIE 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MAVATHCFTSPCHDRIRFFSSDDGIGRLGITRKRINGTFLLKILPPIQSADLRTTGGRSS
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RPLSAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKLVGVLACAFLIVPSADAVDALKTC
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100.0%; Prr
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Pred. No. 6.6e-143;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mismatches
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 462;
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                                                                                                                                   Kirkness,
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R;Galinski, M.R.; Medina, C.C.; Ingravallo, P.; Barnwell, J.W. Cell 69, 1213-1226, 1992
A;Title: A reticulocyte-binding protein complex of Plasmodium vivax merozoites. A;Reference number: A42771; MUID:92315338
A;Status: preliminary
                                                                                                                                                     reticulocyte-binding protein 1 - plasmodium vivax
C;Species: Plasmodium vivax
C;Date: 04-Mar-1993 #sequence_revision 18-Nov-1994 #text_change
C;Accession: A42771
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A:Reference number: A69250; MUID:98049343 A:Accession: H69378
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A;Cross-references: GB:AE001032; GB:AE000782; NID:g2689355; PID:g2649562; TIGR:AF1032
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A:Status: preliminary; nucleic acid sequence not shown; translation not shown
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1349 EKVGRTEMTLFQRLAEGFN---ELKQDEENFVRELSKEEMEFLDEIKMEASEVEKLFGKA 1405
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1131 SRKKCVPRKSDLGEFPAPDPSVLVQNFNISDFNGKWYITSGLNPTFDAFDCQLHEFHTEG
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1071 ACLLKGCRIELAKCIANPACAANVACLQTCNNRPDETECQIKCGDLFENSVVDEFNECAV 1130
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                                                                                                                                                                                                                                                                                                                                                                 642 EEIR 645
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                373
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  452 IMAEYTREMKRIAEELAKADEIEKKLKERLEKVEKALEKQETVLKYRQMVDELKALENEL
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           911 DEENFLRELSKEEMDV----LDGLKMEATEVEKLFGRALPIRKLMAVATHCFTSPCHDRIR 967
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            854 TCGPEPPLVERLEKKVEEGERTI---IKEVEEIEEEVEKVRDKEVTLFSKLFEGFKELQR 910
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       KLKKLIAKKSSLKTRGAQLKKAVEE------LKSAERTCPVCGRELDEEHRKN 451
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           D----NSKLEEITKRIEELERELERFEKSHRLLE-----TLKPKMDRMQGIK--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DIVPLPSKNELKELTAPL------LIKLVGVLACAFLIVPSADAVDALKTC 1070
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EDY-----ENAWKNLGAVIRMLEREKERLKEFLSQEEQIKRQKEEK-----KAEIE 197
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FFSSDDGIGRLGITRKRINGTFLLKILPPIQSA--DLRTTGGRSSRPLSAFRSGFSKGIF 1025
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137; Conser
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                                                                                                                                                                                                                                                                                                                                                                                                                                                              QSLRPFYNKWLELKDAESRLESELKRRE-KLEDEISEAIAKLEEANGKA
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ----KLSAESEE-----YRKVKERLDGLRGQQKILLSSA---SRI
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ---DNKLVGNISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLYN--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ----AKLEEKNLTPDKVE---KMYDLLSKAKEEE-KEITE 404
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 2;
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Db dd	Фр	ОУ	Дy	Оy	Qу Дъ	Оу Дъ	ОУ	Ф. У	0y 9b	ОУ	ОУ	ОУ	Оy	Qy db	ОУ ОУ	Qu Ма	A; Mol A; Res A; Exp A; Not
790 1887	761 1827	729 1767	670 1716	613 1660	553 1604	493 1559	456 1506	416 1447	373 1389	342 1329	283 1301	225 1257	171 1200	111 1161	57 1110	ery Ma st Loc tches	ecule idues erime e: se
SKVENSPE-DYIFVYYKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDFN :	FVQDPKYPGILYNHDNEYLLYQDDWYILSFVQ	EFHTEENKLVGNLSWRI	NECAVSRKKCVPR-KSDVGDEPVPDPSVLVQKEDMKDESGKWEITRGLNPIEDAFDCQLH 7	CNNRPDETECQ-IKCGDLFENSVVDEF : : : : : : : : : : : : : : : : : :	NLSPAHSINQNVPKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADAVDALK 6 : : : : : : : : : :	VGSKLPGHKRFSWGWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGKH 5	ATEVEKLFGRALPIRKLRMALAPHSNFLANHETIKYY 4 ::: : ::: AFHTVEAQVDKTKAFCESIVAYVTKMDNLFNESL-MKEVKVKCEKKNDEAEKY- 1	EMTLFQRLLEGFKELQODEENFVRELSKEEKEILNELQME 4 : ::	CGPEPPLVERLEKTAEEGEKLLIKEAVEIEEEVEKEVEKVRDI 4	PTLPESIIPNLQKAAKSVGRDFNN3	PDLPGALYNHDNEFLHYQDDWYILSSQIENKPDDYIFVYYRGRN-DAWDGYGGSVIYTRS 3 : : : : : : : : :	SGKWYITSGLNPTFDAFDCQLHEFHMENDKLVGNLTWRIKTLDGGFFTRSAVQTFVQD 2 : : : : : : : : : : : : :	COIKCGDLFENSVVDOFNECAVSRKKCVPRKSDVGEFPVPDRNAVVQNFNM-KDF 2 :	IVLVCTFVIVPRVDAVDALKTCACLLKECRIELAKCIANPSCAANVACLQTCNNRPDETE 17	TSYKTSSFSDSSHCKDKSQICSIDTSFEEIQRFDLKRGMTLILEKQWRQFIQLA 1	2.1%; Score 155.5; DB 2; Length 2829; al Similarity 17.4%; Pred. No. 0.33; 283; Conservative 242; Mismatches 573; Indels 529; Gap	type: DNA : 1-2829 <gal> ntal source: Belem strain, merozoites quence extracted from NCBI backbone (NCBIN:108114, NCBIP:10811</gal>
846 1931	790 1886	760 1826	728 1766	7 6	512 L659	552 L603	192	505	.15 .446	.73 .388	41	82	24 256	199	.161	ıs 76,	5)

RESU H3680 A; NG A; R6 A; R6 A	Qу	Qу	Qу Дъ	ОУ	QУ	ОУ	Qy Db	Db Db	Qy Db	Оу	Qу	ОУ
RESULT 5 H36812 C;Species: sain A;Note: host S; C;Date: 16-Oct C;Accession: H R;Albrecht, J. submitted to t. A;Description: H A;Accession: H A;Contents: I A;C	1391 2487	1354 2427	1302 2373	1268 2313	1228 2253	1168 2217	1111 2167	1051 2118	995 2078	935 2041	881 1992	847 1932
Othetical protein ORF64 - saimiriine herpesvirus 1 (strain 11) pecies: saimiriine herpesvirus 1 pecies: saimiri sciureus (common squirrel monkey) ote: host Saimiri sciureus (common squirrel monkey) ate: 16-Oct-1992 #sequence_revision 16-Oct-1992 #text_change 09-Sep-1997 accession: H36812 lbrecht, J. lbrecht, J. lbrecht, J. structure of the herpesvirus saimiri genome. reference number: A36806 ccession: H36812 ccession: H36812 ross references: G3:X64346; NID:g60320; PID:g60385 ross references: G3:X64346; NID:g60320; PID:g60385 ross references: G3:X64346; NID:g60320; PID:g60385 virons references: G3:X64346; NID:g60320; PID:g60385 cloecule type: DNA residues: 1-2469 <alb> virol. 66, 5047-50:8, 1992 virol. 66, 5047-50:8, 1992 virol. 66, 5047-50:8, 1992 virol. 67, 5047-50:8, 1992 virol. 67, 5047-50:8, 1992 virol. 67, 5047-50:8, 1992 virol. 67, 5047-50:8, 1992 virol. 68, 5047-50:8, 1992 virol. 69, 5047-50:8, 1992 virol. 61, 5047-50:8, 1992 virol. 61, 5047-50:8, 1992 virol. 61, 5047-50:8, 1992 virol. 62, 5047-50:8, 1992 virol. 64, 5047-50:8, 1992 virol. 66, 5047-50:8, 1992 virol. 67, 5047-50:</alb>	IKMEASE 1397 : IKRNVTE 2493	TE	FSTFIRTDNTCGDEPALVERIEKTVEEGERIIVKEVEEIEEEVEKEVEKVGR 1353 	WDGYGGAVVYTRSSVLPNSIIPELEKAAKSIGRD 1302 	LYNHDNEYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDA 1268 :	ITSGLNPTFDA7DCQLHEFHTEGDNKLVGNISWRIKTLDSGFFTRSAVQKFVQDPNOPGV 1227 	IKCGDLFENSVVDEFNECAVSRKKCVPRKSDLG-EFPAPDPSVLVQNFNISDFNGKWY 1167 :	LACAFLIVPSADAVDALKTCACLLKGCRIELAKCIANPACAANVACLQTCNNRPDETECQ 1110VIENNSTIDELYKLGKNCQAHWISLISYTANNKTSKKLIMINKEKENTE 2167	PPIQSADLRTTGGRSSRPLSAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKLVGV 1050 	TEVEKLFGRALPIRKLMAVATHCFTSPCHDRIRFFSSDDGIGRLGITRKRINGTFLLKIL 994 	EEIEEEVEKVRDKEVTLFSKLFEGFKELORDEENFLRELSKEEMDVLDGLKMEA 934 :: : ::	TFIKTDTIIKEV 880 : :: ::: ::: AEMKSNFKTDLELEIFSVISNSNELLKKIEQDSNDVIQKERESEQLAKDATDIYNVIKLK 1991

A:Molecule type: DNA A:Residues: 1-87,'Q', 89-106,'E',108-177;1325-1702,'DR',1705-1786,1788-1803,'E',1804-1 R:Yamauchi-Takihara, K.; Sole, M.J.; Liew, J.; Ing, D.; Liew, C.C. R:Yamauchi-Takihara, K.; Sole, M.J.; Liew, J.; Ing, D.; Liew, C.C. R:Yamauchi-Takihara, K.; Sole, M.J.; Liew, J.; Ing, D.; Liew, C.C. A:Reference number: A94226 A;Contents: annotation; erratum R:Kurabayashi, M.; Tsuchimochi, H.; Komuro, I.; Takaku, F.; Yazaki, Y. J. Clin. Invest. 82, 524-531, 1988 A:Title: Molecular cloning and characterization of human cardiac alpha- and beta-form human atrium. A:Reference number: A92770; MUID:88299163 A:A:Reference number: A92770; MUID:88299163 A:Residues: 1412-1518,'R.; 1520-1574,'NV',1577-1935 <kur> A:Gross-references: G8:M21665 A:Gross-references: G8:M21665 A:Gross-references: G8:M21665 A:Inchter, P.; Umeda, P.K.; Levin, J.E.; Vosberg, H.P. Eur. J. Biochem. 160, 419-426, 1986 A:Title: Partial characterization of the human beta-myosin heavy-chain gene which is</kur>	RESULT 6 A37102 A37102 Myosin beta heavy chain, cardiac and skeletal muscle - human N;Contains: myosin ATPase (EC 3.6.1.32) C;Species: Homo saptens (man) C;Date: 31-Dec-1993 #sequence_revision 31-Dec-1993 #text_change 20-Mar-1998 C;Accession: A37102; S12733; A94224; B28908; A24997; A27858; 154254; S12458; S09331; R;Jaenicke, T; Diederich, K.W.; Haas, W.; Schleich, J.; Lichter, P.; Pfordt, M.; Bac Genomics 8, 194-206, 1990 A;Title: The complete sequence of the human beta-myosin heavy chain gene and a compar A;Reference number: A37102; MUID:91065634 A;Residues: 1-1935 <ajae> A;Cross references: GB:M57965; GB:M30603; NID:g179507; PID:g179508; GB:M30604; GB:M30 A;Cross references: GB:M57965; GB:M30603; NID:g179507; PID:g179508; GB:M30604; GB:M30 Nucleic Acids Res. 18, 3647-3651, 1990 A;Title: Complete sequence and organization of the human cardiac beta-myosin heavy ch A;Residues: 1-106; CF, 108-671, TYH', 675-857, TA, 859-941, NY', 944-1123, TA', 1125-1158, TA, Cross-references: EMBL:X52889; NID:g29726; PID:g29727 R;Yamauchi-Takihara, K.; Sole, M.J.; Liew, J.; Liew, C.C. A;Ccession: A94224 A;Accession: A94224; MUID:89264452 A;Accession: A94224; MUID:89264452 A;Accession: A94224</ajae>	Qy 1150 PSVLVQNFNISDFNGKWYITSGLNPTEDAFDCQLHEFHTEGDN-KLVGNISWRIKTLD 1206

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A;Cross-zet-color.

R;Saez, L; Leinwand, L.A.

R;Saez, L; Leinwand, L.A.

Rucleic Acids Res. 14, 2951-2969, 1986

A;Title: Characterization of diverse forms of myosin heavy chain expressed in adult huma

A;Reference number: A93616; MUID:86176778

A;Accession: B23767

A;Molecule type: mRNA

A;Restidues: 'LiGyGELASG',1311-1312,'G',1314-1355,'R',1357-1358,'GD',1361-1438,'LO',1441-
A;Restidues: 'LiGyGELASG',1311-1312,'G',1314-
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A; Residues: 1854-1865, 'A',1867-1935 <SAE>
A; Cross references: GB: X05631; GB: Y00362; NID: 934643; PID: 934644
R; Diederich, K.W.; Eisele, I.; Ried, T.; Jaenicke, T.; Lichter, P.;
Hum. Genet. 81, 214-220, 1989
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A;Residues: 682-721;975-1112;1854-1935 <LIC>
A;Cross-references: GB:X04627
A;Cross-references: GB:X04627
R;Saez, L.J.; Gianola, K.M.; McNally, E.M.; Feghali, R.; Eddy, R.; Shows, T.B.; Leinwar Nucleic Acids Res. 15, 5443-5459, 1987
A;Title: Human cardiac myosin heavy chain genes and their linkage in the genome.
A;Reference number: A93669; MUID:87260010
A;Reference number: A93669; MUID:87260010
A;Reference number: A93669; MUID:87260010
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A;Accession: A24997
A;Molecule type: DMA
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R;Jandreski, M.A.; Liew, C.C.
Hum. Genet. 76, 47-53, 1987

A;Title: Construction of a human ventricular
A;Reference number: S02229; MUID:87192738
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A;Residues: 785-1076, E',1078-1123,'A',1125-1702,'DE',1705-1935 <BOB>
A;Cross-references: EMBL:X51591; NID:g29467; PID:g29468
A;Cross-references: EMBL:X51591; NID:g29467; PID:g29468
B;Bober, E.; Buchberger-Seidl, A.; Braun, T.; Singh, S.; Goedde, H.W.; Arnold, H.H.
Eur. J. Biochem. 189, 55-65, 1990
A;Title: Identification of three developmentally controlled isoforms of human myosin h
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A;Accession: S02229
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A;Residues: 1393-1702, 'DR',1705-1935 <JAN>
A;Cross-references: EMBL:X06976; NID:g34860; PID:g825594
R;Saez, L.; Leinwand, L.A.
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A;Residues: 785-830,'X',832-900,'X',902-970,'X',972-1040,'X',1042-1076,'E',1078-1110,'',1602-1670,'X',1672-1702,'DE',1705-1740,'X',1742-1810,'X',1812-1935 <BOW>
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A;Accession: S09331
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A;Molecule type: DNA
A;Residues: 653-720 CRES>
A;Cross-references: GB:M27636; NID:g179511; PID:g601916
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	Query Matc Best Local Matches 2	.98; Score 146; DB 1; Length 1935; Match Conservative 207; Mismatches 529; Indels 434; Gaps 5
nd	0у 203	DVGEFPVPDRNAVVQNENMKDESGKWYITSGLNPTFDAFDCQLHEF 248
	Db 461	DIAGFEIFDENSFEQLCINFTNEKLÓQFFNHHMFVLEQEEYKKEGIEWTFIDFGMDLQAC 520
	ОУ 249	HMENDKLVG
	Db 521	IDLIEKPMGIMSILEEECMFPKATDMTFKAKLFDNHL 557
	Оу 294	NEFLHYQDDWYILSSQIENKPD-DYIFVYYRGRNDAMDGYGGSVIYTRSPTLPESI 348
ge	Db 558	GKSANFQKPRNIKGKPEAHFSLIHYAGIVDYNIIGWLQKNKDPLNETV 605
	Оу 349	IPNLQKAA-KSYGRDENNFITTDNSCGPEPPLVERLEKTAEEGEKLLIKEAVEIEEEEVEK 407
—	Db 606	VGLYQKSSIKLLSTLFANYAGADAP-IEKGKGKAKKGSSFQTVSALH-RENLNK 657
	Qy 408	EVEKVRDTEMTLFQRLLEGFKELQQDEENFVRELSKEEKEILNELQMEAT- 458
	Db 658	LMTNLRST
	Qy 458	EVEKLEGRALP
	Db 700	EGIRICRKGEPNRILYGDFRQRYRILNPAAIPEGQFIDSRKGAEKLLSSLDIDHNQYKFG 759
	QY 507	WEDTERSTAND WEDTER
1ea	Db 760	HTKVFFKAGLIGLLEEMRDERLSRIITRIQAQSRGVLARMEYKKLLERRDSLLVIQWN 817
	Qy 564	VPKGNSGCKFFKDVALMVWEKWGQFAKTAIVAIFILSVASKADAVDALKTCTCLLKEC 622
×	Db 818	IRAFMGVKNW-PWMKLYFKIKPLLKSAEREKEMASMKEEFTRLKEALE 864
	Qy 622	RLELAKCISNPACAANVACLQTCNNRPDETECQIKCGDLFENSVVDEFNE 671
<u>+</u>	Db 865	KSEARRKELEEKNVSLLQEKNDLQLQVQAEQDNLADAEERCDQLIKNKIQLEAKVKEMNE 924
	ОУ 672	CAVSRKKCVPRKSDVGDEPVPDPSVLVQKEDMKDESGKWEITRGL 716
	Db 925	RLEDEEEMNAELTAKKRKLEDECSELKRDIDDLELTLAKVEKEK 969
	Qy 717	NPTFDAFDCQLHEFHTEENKLYGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHDN 776
	Db 969	EIIAKLTKEKKALQEAHQQAL 1007
il a	ОУ 777	EYLLYQDDWYILSSKVENSPEDYIFVYYKGRNDAWDGYGGSVLYTRSA 825
	Db 1008	DDLQAEEDKVNTLTKAKVKLEQQVDDLEGSLEQEKKVRMDLERAKRKLE 1056
can:	QY 825	VLPESIIPELQTAAQKVGRDFVTFIKTDNTCGPEPPLVE 863
	Db 1057	GDLKLTQESIMDLENDKQQLDERLKKKDFELNALNARIEDEQALGSQLQKKLKELQARIE 1116
	Оу 864	KKVE
	Db 1117	ELEEEL-ESERTARAKVEKLRSDLSRELEEISERLEEAGGATSVQIEMNKKREAEFQKMR 1175
rt E	0у 890	
	Db 1176	RDLEEATLOHEATAAALRKKHADSVAELGEQIDNLQRVKQKLEKEKSEFKLELDDV 1231
	ОУ 934	
	Db 1232	TSNMEQIIKAKANLEKMCRTLEDQMNEHRSKAEETQRSVNDL 1274
	ОУ 994	LPPIQSADLRTTGGRSSRPLSAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKLVGV 1050
	Db 1274	TSQRAKLQTENGELSRQLDEKEALISQLTRGKLTYTQQ

Qy 170 ECQIKGGDLFENSVVDQFNECAVSRKKCVPRKSDVGEFPVPDRNAV 215	801 LAYLVEHAKATDHHLLSDSAYEELVKCKENPDMEFLKEKSAKLGHTVVSNFAYSEL 85	116 TFVIVPRVDAVDALKTCACLLK	QY 62 SSFSDSSHCKDKSQICSIDTSFEEIQRFDLKRGMTLILEKQWRQFIQLAIVLVC 115 ::	283; Conservative 23;	Query Match 1.9%; Score 146; DB 2; Length 2748; Best Local Similarity 17 0%. Dred No. 1 3.		A;Gene: SGD:NUM1 A;Cross-references: SGD:S0002557: MIPS:YDR150w	A;Cross-references: EMBL:X61236; NID:g4071; PID:g4072 C;Genetics:	A 1571-1821 'X' 1822-1950 'BUT' 1960 1950 'X' 1571-1821 'X'	A; Reference number: S19052; MUID:92079907 A; Accession: S19052	in, r.k.; Perecko, D.; kuentz	· Zimmormuss et v . Dosovio	A;Residues: 1-2748 <mur> A;Cross-references: EMBL:Z50046; NID:q899393; PID:q899399; MIPS:YDR150w</mur>	A;Accession: S57976 A;Molecule type: DNA	submitted to the EMBL Data Library, July 1995 A; Reference number: S57971	\$57976; \$19052; \$17018 ; Richards, C.; Harris, D.	C;Decres: Saccharomyces cerevisiae C;Date: 13-Jan-1996 #sequence_revision 01-Mar-1996 #text change 06-Feb-1998	nuclear migration protein NUM1 - yeast (Saccharomyces cerevisiae) N;Alternate names: protein YD8358.06; protein YDR150w	RESULT 7 S57976		1612 LRVKKKMEGDLNEMEIQLSHANRMAAEA		1552				1449 FDKILAEWKOKYEESQSELESSQKE	Qy 1231 HDNEYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPE 1290	1406 AVNAKCSSLEKTKHRLQNEIEDLMVDVERSNAAAAALDKKQRN	DSGFFTRSAVOKFVODPNOPGVI.YN		1111 IKOGDI.FENGVVDEENEGAVGBKKOVODKKOTOFENGATOROKOVIONIONIONIONIONIONIONIONIONIONIONIONIONI	THE TAXABLE PROPERTY OF THE PR
dd Yu	Db	Qy	ДУ) Db	Qy	Дb	Qy	DЪ	Qy	ДĎ	Qy	рь	Qy	Дb	Qy	מם	Qу	Db	Qy	Db	Qy	Db	Qу	Db	Qy	Db	Qy	da	Qy	Db	Qy	DЬ	Qy
1062 1771 GMNKI	1730 IDYMQ	1002 LRTTG	949 KLMAV ::: : 1677 QMLII			1577 -PAPQ	856 GPEPF	: 1543 LVLVI	799 YIFV-	1483 EPNEY	774 HDNEY	1436 DVELI	724 DCQ	1378 EYLVR	671 ECAVS	1328 LSDS/	618 LKECI	1269 YEDLY	565 PKGNS	1218 EFLKH	519	1179	464 GRAL	1123 YLVE	409VE	1063 HAKA	364	1003 ТИНН	325 RND- 	949 YE	276 VQTF	900	216 VQNF

QУ 7 Db 2	ОУ 6 ДЬ 2	Qy 5 Db 1	Qу 5 Db 1	Qy 4 Db 1	Qу 4 Дъ	Qу 3 Db	Query Ma Best Loo Matches	RESULT S54174 topoiso C; Speci- C; Acces C; Acces R; Tosh, Rubmitt A; Refer A; Refer A; Rcces A; Statu A; Molec A; Resid A; Cross	Qy 1386 Db 2058	Qy 1331 Db 1998	Qy 1271 Db 1951	Qy 1230 Db 1897	Qy 1174 Db 1856	Qy 1115 Db 1803
04 KDFSGKWFITRGLNPTFDAFDCQLHEFHTEENKLVGNLSWRIRTPDGGFFTRSAV 758	650 ETECQIKCGDLFENSVVDEFNECAVSRKKCVPRKSDVGDFPVPDPSVLVQKFDM 704 :: : :: : 232 ENETKLKKGDISNFKFID	90 KTAIVAIFILSVASKADAVDALKTCTCLLKECRLELAKCISNPACAANVACLQTCNNRPD 649 : :	30 RKSPRICCGLDSRGLQLFSHGKHNLSPAHSINQNVPKGNSGCKFPKDVALMVWEKWGQFA 589	170 RKLRMALAPHSNFLANHETIKYYVGSKLPGHKRFSWGWEDYFGSIVVAKICSSRRIPRYF 529 	110 EKVRDTEMTLFQRLLEGFKELQQDEENFVRELSKEEKEILNELQMEATEVEKLFGRALPI 469 : : : : : : : :	52 LQKAAKSVGRDFNNFITTDNSCGPEDPLVERLEKTAEEGEKLLIKEAVEIEEEVEKEV 409 : ::: ::: :::: :::: :::	7 Match Local Similarity 17.3%; Score 144.5; DB 2; Length 839; Les 191; Conservative 176; Mismatches 390; Indels 347; Gaps 46;	RESULT 8 \$54174 topoisomerase I - Plasmodium falciparum C.Species: Plasmodium falciparum C.Species: Plasmodium falciparum C.Accession: \$54174 R.Tosh, K.T.; Kilbey, B.J.K. submitted to the EMBL Data Library, January 1995 A.Description: Isolation and characterisation of the topoimerase 1 gene from Plasmodium A;Reference number: \$54174 A;Recession: \$54174 A;Recession: \$54174 A;Recession: \$54174 A;Recession: \$54174 A;Residues: Preliminary A;Rolecule type: DNA A;Residues: 1-839 <toss a;cross-references:="" embl:x83758;="" nid:g790481;="" pid:g790482<="" td=""><td>86 EFLDEIKMEASEVEKLFGKALP 1407 </td><td>31 RIIVKEVEEIEEEVEKEVEKVGRTEMTLFQRLABGENELKQDEENFVRELSKEEM 1385 </td><td>1 YGGAVVYTRSSVLPNSIIPELEKAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGE 1330 : : : :: : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : :</td><td>0</td><td>4 PTFDAFDCQLHEFHTEGDNKLVGNISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLY 1230 </td><td>5 DLFENSVVDEFNECAVSRKKCVPRK-SDLGEFDAPDPSVLVQNFNISDFNGKWYITSGLN 1173 </td></toss>	86 EFLDEIKMEASEVEKLFGKALP 1407 	31 RIIVKEVEEIEEEVEKEVEKVGRTEMTLFQRLABGENELKQDEENFVRELSKEEM 1385 	1 YGGAVVYTRSSVLPNSIIPELEKAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGE 1330 : : : :: : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : :	0	4 PTFDAFDCQLHEFHTEGDNKLVGNISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLY 1230 	5 DLFENSVVDEFNECAVSRKKCVPRK-SDLGEFDAPDPSVLVQNFNISDFNGKWYITSGLN 1173

A; S A; S A; C	Natu A;Au A;Ti A;Re A;Ac	SOD R	RESULT G70163 hypoth C; Spec C; Date	Дb	Qy	Db	Qy	DЬ	Qy	DЪ	Qγ	Db	VΩ	Db	Qy .	מם	Qy	Db	Qy	Db -	Оy	Дb	Qy	В	Qy	dg ,	Qy
tus: ecul idue: ss-r	Authors: Authors: Title: Gel Reference Accession	;Accession: ;Fraser, C.; on, D.; Pet Bowman, C.	ULT 9	803	1391	759	1332	739	1272	704	1213	667	1153	608	1097	560	1039	521	980	73	923	434	863	382	807	332	759
3 H 73	990, 580-583, 1997 991, bauth, H.O.; Venter, J.C. Genomic sequence of a Lyme disease spirochaete, Borrelia burgdorferi. 902 none number: A70100; MUID:98065943	un: G/0103 (C.), Casjens, S.; Huang, W.M.; Sutton, G.G.; Clayton, R.; Lathigra, R.; Wh. Peterson, J.; Kerlavage, A.R.; Quackenbush, J.; Salzberg, S.; Hanson, M.; Vu., C.; Garland, S.; Fujii, C.; Cotton, M.D.; Horst, K.; Roberts, K.; Hatch, B.	RESULT 9 G70163 G70163 Aypothetical protein BB0512 - Lyme disease spirochete C;Species: Borrelia burgdorferi (Lyme disease spirochete) C;Date: 13-Feb-1998 #:=quence_revision 13-Feb-1998 #text_change 05-Jun-1998 C;Date: 13-Feb-1998	TVAFCKKEIPIEKVENRSLRLK 826	IKMEASEVEKLFGKALPIR 1409	EESCKKKLITLIKKVELLNNQMKVRDDNKTIALGTSKINYMDPR 802	<pre>KVGRTEMTLFORLAEGFNELKODEENFVRELSKEEMEF</pre>	SKVSTLDGTLRP	RSSVLENSIIPELEKAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTV	SKIKKQIE TYNEDIKEYKKYLQHLKKNSDKKFIFV 739	SAVQKFVQDPNQFGVLYNHD-NEYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDAWDGY 1271	DVSNIN 703	TEGDNKLVGNI	KRKSSHLTSDTNILSDASDSTINDVNNEYDENGINKKLSYATTVGKENDVDDKNSP-IEV 666	LQTCNNRPDETECQIKCGDLFENSVVDEFNECAVSRKKCVPRKSDLGEFPAPDPSV 1152	PTLSAKVFRTYNASITLDQQLKRIKEVYGKTTYSLYSG-ETELHKSK	LTAPLLLKLVGYLACAFLIVPSADAVDALKTCACLLKGCRIELAKCIANPACAANVAC 1096	VKIDKQAYINII	DIVPLPSKNE-L	SKECKTNDEKVNKIPLPTNLESISSEDCYITLDF	EMDVLDGLKMEATEVEKLFGRALPIRKLMAVATHCFTSPCHDRIRFFSSDDGIGRLG 979	DFLALRV-GGEKDIDEEADTVGCCSLRVEHISFAHDIPFK 472	IEEEVEKVRDKEVILFSKLFEGFKELQRDEEN	AQSKEKGYKULYKYENARKLKSCVHKIREDYKNKMKNKNIIDKQLGTAVYLI 433	LYTRSAVLPES	:	QKFVQDPKYPGTLYNHDNEYLLYQDDWYILSSKVENSPEDYIFVYYKG 806

Query Match 1.9%; Score 144; DB 2; Length 2166; Best Local Similarity 16.8%; Pred. No. 1.2;

Qy

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	OY	Db Db	
738 V-GNLSWRIRTPDGGFFTRSAVOKFVQDPKYPGILYNHDNEYLLYQDDWYILSSKVEN 794 1163 IESNFEERYSTFLIESEGAISK-IRDEIYKTLTSNDENLQIKISE 1206 795 SPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKV 841 1207 MDQNFEIIEQRSKDILEFEKELQDKIKDCY-GFINSQFGEIKAGVEENIKNHFDVCIKKV 1265 842 GRDFNTFIKTDNTGGFEPPLVERLEKKVEEGERTIIKEV-EEIDEEVEKVHFDVCIKKV 1265 844 GRDFNTFIKTDNTGGFEPPLVERLEKKVEEGERTIIKEV-EIDEEVEKVHFDKE 894 11		599 - NIVEFRDRYY DEVNIFVTQLEESKLQYSKWOĞEMDSNIKNIE 641 279 FVQDPDLPGALYNHDNEFLHYQDDWYILSSQIENKPDDYIFVYYRGRNDAWDGYGG 334 641SQINKTNEEFLSLIQIQKDKGIELSESVFNDLSDHIQKKAIDMHGS 686 335SVIYTRSPTLPESIIPNLQKAAKSVGRDENNFITTDNSCGPEPPLVERLE	es 268; Conservat 44 RSNNGYFNSFRLFTSY 82 RFNNYSNLNDNINAK 99 LEKQWQFIQLAIVLV :: 38 YGEKFETLSQ 59 LQTCNNRPDETECQIK ::: :: 67 IESFYNMFEKTQETIK 19 FNMKDFSGKWYITSGL :: ::
Query Match 1.9%; Score 143.5; DB 2; Length 1558; Best Local Similarity 17.9%; Pred. No. 0.77; Matches 206; Conservative 153; Mismatches 377; Indels 413; Gaps 50; Oy 347 SIIPNLOK-AAKSVGRDENNEITTDNSCGPEPPLVERLEKTAEEG 390	RESULT 10 By1603 RESA-H3 antigen PFB0915w - malaria parasite (Plasmodium falciparum) C:Species: Plasmodium falciparum C:Species: Plasmodium falciparum C:Date: 13-Nov-1998 #sequence_revision 13-Nov-1998 #text_change 13-Nov-1998 C:Accession: By1603 R:Gardner, M.J. Tettelin, H.; Carucci, D.J.; Cummings, L.M.; Aravind, L.; Koonin, E. :: Pertea, M.J. Salzberg, S.; Zhou, L.; Sutton, G.G.; Clayton, R.; White, O.; Smith, H Science 282, 1126-1132, 1998 A;Title: Chromosome 2 sequence of the human malaria parasite Plasmodium falciparum. A; Reference number: Ay1500 A; Reference number: Ay1503 A; Accession: By1603 A; Status: preliminary: nucleic acid sequence not shown; translation not shown A; Molecule type: DNA A; Molecule type: DNA A; Residues: 1-1558 <gar> A; Cross-references: GB:AE001424; GB:AE001362; NID:g3845307; PID:g3845309; TIGR:PFB091 A; Genetics: A; Gene: PFB0915w</gar>	11 11 15 12 16 16 17 17	FTSPCHDRIRFFSSDDGIGRLGITRKRING

Dβ

DЬ Qy

δÃ DЪ Ωy В Qy Db Qy ДЬ Qγ Дb Qy DЪ Qy DЪ QУ B Qy Дb Qy Дb QΥ DЪ Qγ DЪ

Оy	ДУ	Оу	Db .	ОУ	Qу	Qу	Фр	Qу	ру	gg Qy	Qу	Оу	do . Qy	gb Qy	A 40	Фý	Db
Qy 1394 EASEVEKLF 1402 	Qy 1342 EEVEKEVEKVGRTEMTLFQRLAEGFNELKQDEENFVRELSKEEMEFLDEIKM	Qy 1293 KAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGERIIVKEVEEIE :	QY 1233 NEYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELE	Qy 1173 NPTFDAFDCQLHEFHTEGDNKLVGNISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLYNHD	1113 CGDLFENSVVDEFNECAVSRKKCVPRKSDLGEFPAPD	Qy 1055 FLIVPSADAVDALKTCACLLKGCRIELAKCIANPACAANVACLQTCNNRPDETECQIK	Qy 995 PPIQSADLRTTGGRSSRPLSAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKLVGVLACA	QY 946PIRKLMAVATHCFTSPCHDRIRFFSSDDGIGRLGITRKRINGTFLLKIL	Qy 894 EVTLFSKLFEGFKELQRDEENFLRELSKEEMDVLDGLKMEATEVEKLFGRAL	Qy 849 IKTDNTCGPEPPLVERLEKKVEEGERTIIKEVEEIEEEVEKVRD	QY 792 -VENSPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDFNTF : : : : :	QY 732 TEENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLYQDDWYILSSK	Qy 674 VSRKKCVPRKSDVGDFPVPDPSVLVQKFDMKDFSGKWFITRGLNPTFDAFDCQLHEFH	Qy 617 LLKECRLELAKCISNPACAANVACLQTCNNRPDETECQIKCGDLFENSVVDEFNECA	Qy 558 HSINQNVPKG-NSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADAVDALKTCTC	Qy 502 RESWGWEDYEGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGKHNLSPA	Db 740 EKLNETVFNTVLDKVEETVEISGESLENNEMDKAFFSEIFDNVKGIQENLLTG
	1393 1445	1341 1394	1292 1334	1232 1320	1172 1292	1112 1269	105 4 1231	994 1190	946 1157	893 1097	848 1046	791	731 961	673 932	616 878	557 840	793

RESULT S06006

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C;Species: Rattus norvegicus (Norway rat)
C;Date: 31-Dec-1993 #sequence_revision 31-Dec-1993 #text_change 13-Feb-1998
C;Date: 30-006; $006; $07536; I67441
R;Kraft, R; Bravo-Zehnder, M.; Taylor, D.A.; Leinwand, L.A.
Nucleic Acids Res. 17, 7529-7530, 1989
A;Title: Complete nucleotide sequence of full length cDNA for rat beta cardiac myosin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A.Cross-references: GB:M32698; NID:g205598; PID:g205599
C. Superfamily: myosin heavy chain; myosin motor domain homology
C. Keywords: actin binding; ATP; cardiac muscle; coiled coil; hea
F:88-766/Domain: myosin motor domain homology <MMOT>
F:178-185/Region: nucleotide-binding motif A (P-loop)
F:548-585/Region: actin binding #status predicted
F:548-585-777/Region: actin binding #status predicted
F:339-1935/Domain: coiled coil #status predicted
F:839-1935/Domain: coiled coil #status predicted
F:839-1935/Region: Silled coil #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              R:McNally, E.M.; Kraft, R.; Bravo-Zehnder, M.; Taylor, D.A.; Leinwand, L.A. J. Mol. Biol. 210, 665-671, 1989
A;Title: Full-length rat alpha and beta cardiac myosin heavy chain sequences. Compari A;Reference number: 8:97535; MUID:90133919
A;Accession: 8:07536
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          R;Mahdavi, V.; Lompre. A.M.; Chambers, A.P.; Nadal-Ginard, B.
Eur. Heart J. 5, 181-191, 1984
A;Title: Cardiac myosia heavy chain isozymic transitions during development and under A;Reference number: I53305; MUID:85179510
A;Accession: I67441
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A; Residues: 1-950, 'RK', 953-1935 <MCN>
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A; Residues: 1-1935 <KRA>
A; Cross-references: ENBL:X15939; NID:956656; PID:956657
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    F;1280-1935/Region: light meromyosin F;1280-1935/Region: light meromyosin (Lys) *status predicted F;129/Modified site: N6,N6,N6-trimethyllysine (Lys) *status predicted F;184/Binding site: AlfP (Lys) *status predicted F;695,705/Active site: Cys *status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Molecule type: mRNA
A; Residues: 1871-1935 < RES>
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   648 SALH-RENLNKIMTNLRST--
                                                                                                                              595 QKNKDPLNETVYGLYQKSSLKLLSNLFANY-----AGADAP-VDKGKGKAKKGSSFQTV 647
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          217 QNFNMKDFSGKWYITSGLNPT------
                                                                397 EAVEIEEEVEKEVEKVRDTEMTLFQRLLEGFKELQQDEENFVRELSKEEKE----- 448
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         y Match 1.9%; Score 142.5; 1 Local Similarity 16.7%; Pred. No. 1.2;
                                                                                                                                                                                            YTRSPTLPES1T?NLQKAA-KSVGRDFNNFTTTDNSCGPEPPLVERLEKTAEEGEKLLIK 396
                                                                                                                                                                                                                                                         MTFKAKLYDNHLGKSNNFQKPRNIKGKQEAH----FSLIHYAGTYDYNILGW-----L 594
                                                                                                                                                                                                                                                                                                                                                                                           QQFFNHHMFVLFQEEYKKEGIEWTFIDFGMDLQACIDLIEKPMGIMSILEEECMFPKATD 545
                                                                                                                                                                                                                                                                                                                             PDLPGALY-NHUNEFLHYQDDWYILSSQIENKPDDYIFVYYRGRND----AWDGYGGSVI 337
                                                                                                                                                                                                                                                                                                                                                                                                                                                               VGNLTWRIKTLDGGFFTRSAVQ-TFVQ-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             KSVYEKMEN---WMVTR-INATLETKQPRQYFIGVLDIAGFEIFDFNSFEQLCINFTNEKL 485
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative 218; Mismatches
          -HPHFVRCIIPNETKSPGVMDNPL 688
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1538 LELQSALEEAEASLEHEEGKILRAQLEFNQIKAEIERKLAEKDEEMEQAKRNHLRVVDSL 1597
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                     1382 ---
                                                                                                                                   1331 RIIVKEVEEIEEEVEKEVEKVGRTEMTLFQ------RLAEGFNELKQDEENFVRELS--
                                                                                                                                                                                                                                                                                                                                                                                                             1217 KFVQDPNQPGVLYNHDNEYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDAWDGYGGAVV 1276
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1222 SEFKLELDD----VTSNMEQIIKAKANLEKM-----CRT--LEDOMNEHRS-----KAE 1264
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1162 EMNKKREAEFQKMRRDLEEATLQHEATAAALRKKHADSVAELGEQIDNLQRVKQKLEKEK 1221
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            609 -----DALKTCTCLLKECRLELAKCISNPACAANVACLQTCNNRPDETECQIKCGDLFE 662
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  807 RRDSLLIIQWNIR------AFMGVKNWPWMKLYFKIKPLLKSAETEKEMANMKE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              496 KLPGHKRFSWGWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGKHNLS
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                                                                                                                                                                                                    STELFKLKNAYEESLEHLETFKRENKNLQEEISDLTEQLGSTGKSIHELEKIRKQLEAEK
                                                                                                                                                                                                                                                                      YTRSSVLPNSIIPELE-----KAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGE 1330
                                                                                                                                                                                                                                                                                                                                                  AAALDKKQ----RNFDKILVEWKQKYEESQSELESSQKE------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FNISDFNGKWYITSGLNPTFDAFDCQLHEFHTEGDNKLVGNISWRIKTLDSGFFTRSAVQ 1216
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            WRT------KYETDAIQRTEELEEAKKKLAQRLQDAEE----- 1403
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LQTCNNRPDETECQIKCGDLFENSVVDEFNECAVSRKKCVPRKSDLGEFPAPDPSVLVQN 1156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EDLKRQLEEEVKAKNALAHALQSARHDCDLLREQYEEETEAKAELQRVLSK--ANSEVAQ 1370
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SA-----RDF----NTFIKTDNTCGP 857
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     --AVEAVNAKCSSLEKTKHRLQNEIEDLMVD------VERSNAA 1438
---KEEME-FLDEIKMEASEVEKLFGKA 1405
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65 B 65

Db Qy

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A;Residues: 1-1819 <ARN>
A;Cross-references: GB:AE001481; GB:AE001439; NID:g4155005; PID:g4155007
A;Experimental source: strain J99
C;Genetics:
A;Gene: orf13/14 ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          C;Accession: A71928

R;Alm, R.A.; Ling, L.S.L.; Moir, D.T.; King, B.L.; Brown, E.D.; Doig, P.C.; Smith, D.; Ives, C.; Gibson, R.; Merberg, D.; Mills, S.D.; Jiang, Q.; Taylor, D.E.; Vovis, G.F. Nature 397, 176-180, 1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A;Title: Genomic sequence comparison of two unrelated isolates of the human gastric A;Reference number: A71800; MUID:99120557
A;Accession: A71928
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C:Date: 12-Feb-1999 #sequence_revision 12-Feb-1999 #text_change 12-Feb-1999
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Species:
728 VSKAKNEAERKECE-----KLLTPE-----ARKLLEEAKKSVKAYKDCVLRARNE
                                                      723 FDCQLHEFHTEENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILY------
                                                                                                         685 NQALD----CLKNAKTDEERKECLKDLP------KDLQKKVLAKESVRVYLDC
                                                                                                                                                                                                                                                                     617 LIKEC-----RLELAKCISNPACAANVACLQTCNNRPDETECQ----IKCGDLFE 662
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1598 QTSLDAETRSRNEALRVKKKMEGDLNEMEIQLSHANRMAAEA 1639
                                                                                                                                                         663 NSVVDEFNECAVSRKKCVPRKSDVGDFPVPDDSVLVQKFDMKDFSGKWFITRGLNPTFDA
                                                                                                                                                                                                                     629 EKKECEKLLTPEAKKKLEEAK----KSVRAYLDCVSKAKNEAERKECEKLLTPEAKKLLE
                                                                                                                                                                                                                                                                                                                              575 LKAYKDCASQAKTEAEKKECEKLLTPE-----AKKLLEEEAKESVKAYLDCVSQAKT-EA
                                                                                                                                                                                                                                                                                                                                                                                 571 CKFPKDVA------LMVWEKWGQFAKTAIVAIFILSVASKADAVDALKTCTC
                                                                                                                                                                                                                                                                                                                                                                                                                                        516 ARNEKEKQECEKLLTPEAKKLLENQALDCLKNAKTDEERKECL-KNLPKDLQSDILAKES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       464 GRALPIRKLRMALAPHSNFLANHETIKYYVGSKLPGHKRFSWGWEDYFGSIVVAKICSSR 523
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          412 KECLKLINDPEIREKFRKELELQKELQEYKDCIKNAKTEAEKNECLKGLSKEA--IERLK 469
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             406 EKEVEKVRDTEM-TLFQRLLEGFKELQQDEENFVRELSKEEK-EILNELQMEATEVEKLF 463
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   355 KTLEAYNDCI----KNAKTEEERIKCLDLIKDENLKKSLLNQQKVQVALDCLKNAKTDEER 411
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          358 SYGRDENNFITTDNSCGPEPPLYERLEKTAEEGEK--LLIKEAVEI------EEEV 405
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      298 HYQDDWYILSSQIENKPDDYIFVYYRGRNDAWDGYGGSVIYTRSPTLPESIIPNLQKAAK 357
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            274 ----EIQIRQ;;-EYNRLLKERNEKGNMIDKNLF-----FNDDPN--RTLYN-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            238 FDAFDCQLHEFHMENDKLVGNLTWRIKTLDGGFFTRSAVQTFVQDPDLPGALYNHDNEFL 297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        178 LFENSVYDQFNECAVSRKKCVPRKSDVGEFPVPDRNAVVQNFNMKDFSGKWYITSGLNPT 237
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    QQALDCLKNAKTDEERKECLKN---IPQDLQKELLADM------SVKAYKDCVSR 515
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -----YLNIABIEDK--NPLRAFYECISN-----GGN--YEECLKLIKD--KKLQDQMK 354
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A;Status: preliminary; nucleic acid sequence not shown; translation not shown A;Molecule type: DNA A;Molecule type: DNA A;Residues: 1-1002 <AQF> A;Cross-references: GB:AE000678; NID:g2982921; PID:g2982926; GB:AE000657 A;Experimental source: strain VF5 C;Genetics: A;Gene: nirB
                                                                                                                                                                                          A;Title: The complete genome of the hyperthermophilic bacterium Aquifex aeolicus. A;Reference number: A70300; MUID:98196666
A;Accession: C70319
                                                                                                                                                                                                                                                                                                                                                                nitrite reductase (NAD(P)H) large subunit - Aquifex aeolicus C;Species: Aquifex aeolicus C;Date: 08-May-1998 #sequence_revision 08-May-1998 #text_char C;Accession: C70319
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                                                                                                                                                                                                                                                                                      Nature 392, 353-358, 1998
                                                                                                                                                                                                                                                                                                                                           R;Deckert, G.; Warren, P.V.; Gaasterland, T.; Young, W.G.; Lenox, A.L.; Graham, D.E.;
                                                                                                                                                                                                                                                                                                                                                                      Species: Aquifex aeolicus; Date: 08-May-1998 #text_change 08-May-1998; Date: 08-May-1998 #sequence_revision 08-May-1998 #text_change 08-May-1998; Accession: C70319
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1162 KSVKAYLDC-VSKAKNEAEKKECEKLLTPEARKLLEE---
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1332 DEEKRKCQNLYSDLIQEIQNKKAQNKQN----QLSKTERLHQASECLDNLDDPTDQEAIEQ 1388
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         945 QALDCIKNAKTEAEKKRCVKDLPKDLQKKVLA------KESVRVYLDCVSKAKNEA 994
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	SDTCSFGVIPNKSDAVRVAKYLSE	Db
	PLLIKIVGYLACAFLIVPSADAVDALKTCACLIKGCRIELAKCIANPACA 10	Qy
842	790 AKDERQIAE: "KYYGSRELR-LSVYQNIYIPNIPEENLNPLLGEEIFEKFSTVS	Дb
1040	GRSSRPLSAFRSGFSKGIFDIVPLPS	Qy
789	: : : : : : : : : :	Db ?
998	42 GRALPIRKLMAVATHCFT	O _y
748	96 MFVEPYEVPEVFKATLDIYSTFGNRENRS	Db ;
941	85 EEVEKVRDKEVTLFSKLFEGFKELQRDEENFLRE	0
695	41 RKLNVAVLGSQTDCINALFNDVCFYLSEKDG	Db
884	ERTIIKEVEE	Qy
640	583EALNRVGLSTLQTGMDNVRNVTGDPLTGLAEDSLIDTLRLSQEITNIFLGKKKYADLP	Db
842	RSAVLPES	Qy
583	~ ~	Db
806	GF-FTRSAVQKFVQDPKYPGILYNHDNEYLLYQDDWYILSSKVENSPEDYIFVYYKG	Qy
535	RDV-RLKWYGIFYRKATPGYFMVRIRV	Db
747	FFDAFDCQLHEFHTEENKLVGNLSW	Qу
478	444 TKASTSCGSCIZLVEEILKHYVKEKPKRVNKIEV	Dβ
710	CQIKCGDLFENSVVDEFNECAVSRKKCVPRKSDVGDFPVPDPSVLVQKFDMKDFSGKW	Qy
443	KEGC-KTLEEIQER	Db
650	AKCISNPACAANVACLQTCNNRPDE	Qy
412	368 G-DVRGNNYLLDLIKSGK-DISEERPYFLIKHILPKGTTGVEELKD	Db
590	GLOLIFSHGKHNLSPAHSINQNVPKGNSGCKFPKDVALMVWEKWGQFAK	Qy
367	KAVIRNNKIVGTILY	Дb
537	PGHKRESWG-WEDVEGSIVVAKICSSRRIPRYFRKSPRICC	Qy
310	255 NKGIVVNDYLETSASDIYAVGECIEHRGKTYGLVAPIME-QVKVCAHNVVHGNEKKY	Дb
492	NELQMEATEVEKLFGRALPIRKLRMALAPHSNFLANHETIKYY	QУ
254	201 IKVLLKKVTEEILGEKKAEGVRFSDGDELLADFVIIATGIRPNVEVGVNSGLKV	Db
444	EAVETEZEVEKEVEKVRDTEMTLFQRLLEGFKELQQDEENFVRELSKE	Qy
200	147 AVVIGGGLLGIEVTKALRDIGLEVFLVHILDTLMEQQLDKTASELLRKDLEDMG	Db
390	PTLPESTIP-NJQKAAKSVGRDFNNFITTDNSCGPEPPLVERLEKTAEEG	Qy
146	90 LVTKDGEFYRY - DKAIIATGSKPFIPPSIKGVNKKGVFT-YRTAKDVFEILDYARVSKR 1	Dβ
340	QDDWYILSSQIENKPDDYIFVYYRGRNDAW	Qy
S	Query Match 1.9%; Score 141; DB 2; Length 1002; Best Local Similarity 20.1%; Pred. No. 0.59; Matches 192; Conservative 148; Mismatches 314; Indels 300; Gap	Que Bes Mat

RESULT JC6009

14

847 TASMOSAKSSLDAKVTEITKKLETFNKDKDVKFKELEQTRKDIDEFINTNKTN 692 PDPSVLVQKFDMKDFSGKWFITRGLNPTFDAFDC	DVKFKELEKTRK SKLPGHKRFSWG	ALYNHDNEFLHYODDWYILSSQ	: tetratricopeptide repeat homological control of the control of t	ma hominis "sequence_revision 18-oc "sequence_revision 18-oc "sequence_revision 18-oc "yenen, L.T.; Brock, B.; 2775-2784, 1996 "0.5-kilobase pair repea "0.6009; MUID:96213016 "A "CADD" EMBL:X95601; NID:9119733 ace-located membrane protein al sequence #status predi surface-located membrane etratricopeptide repeat tetratricopeptide repeat tetratricopeptide repeat
OD 329 HFYILSYKVDENLINKLEKEINEVLENMERTKIYITIAEVGYTPNDFKKSEDK-ESKE 385 QY 874 RTIIKEVEEIEEEVEKVRDKEVTLFSKLFEG-FKELQRDEEN	706 FSG	A; Molecule type: DNA A; Molecule type: DNA A; Residues: 1-800 <bul> A; Cross-references: GB:U67607; GB:L77117; NID:g1592244; PID:g1500575; TIGR:MJ1672 C; Genetics: A; Map position: REV1655207-1653805 Query Match Guery Match Best Local Similarity 20.0%; Pred. NO. 0.49; Matches 180; Conservative 96; Mismatches 228; Indels 394; Gaps 45; Qy 650 ETECQICGDLFENSYVDEFNECAVSRKCVPRKSDVGDFPVPDPSV-LVQKF-DMKD 705 </bul>	cal protein MJ1672 - Septianococcus janna Septianococcus janna Septianococcus janna F64508 Septianococcus janna Cli: Overbeek, R.; K.; Sadow, P.W.; Hanna Cli: Overbeek, R.; R.; Barodocomplete genome seque ce number: A64300; MU Chief Complete genome seque c	Qy 726 QLHEFHTEENKLYGNLSWRIRTPDGGFFTRSAVQKFVQ

ДĎ	Qy	g Qy	dg VQ	ОУ	Db Qy	Qy Db	Qу	ОУ	ф
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Search completed: October 14, 1999, 03:19:51 Job time: 2237 sec

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GenCore version 4.5 Copyright (c) 1993 - 1998 Compugen Ltd.
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OM protein - protein search, using sw model

Run on: October 14, 1999, 03:57:50; Search time 26.17 Seconds (without alignments) 1525.213 Million cell updates/sec

Title:
Perfect score:
Sequence:

US-09-075-375-6
7495
1 MALSLHTVFLCKEEALNLYA.....MEASEVEKLFGKALPIRKVR 1412

Scoring table: BLOSUM62

Searched: 77977 seqs, 28268293 residues

Database : SwissProt_37:*

pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

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2 LC 1 EL :	7 IYT: 5 7 EAV	1 MK 7 IK 7 QT 7 QT 4 QS	9 YKTS : HNVA 9 IVPR 4 6 GDLF : TEQE	JT 1 SCHPO STAND Q1041; Q1041; Q10-OCT-1996 (REL. 34 Q1-OCT-1996 N. A STRAIN=972; CONNOR R., CHURCHER SUBMITTED (APR-1996) This SWISS-PROT CULT Detween the Swiss I the European Biclifo use by non-profit modified and this st entities requires a or send an email to or send an email to profit modified and this st entities requires a or send an email to STRAIN-1996 (REL. 3447) EMBL; Z70690; E23447 SEQUENCE 1957 AA; SEQUENCE 1957 AA; sery Match strong Trains A conserved the sery Match strong Trains A conserved the sery Match	116 116
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ř.	ITPNLOKA : NSEHLSSO EVEKVRDT	SINPTFDAFDC	DKSQICS Charlied Char	ANDARD: 34, CREATEI 34, LAST SI 34, LAST SI 34, LAST SI 34, LAST SI 25 POMBE (F. ASCOMYCOTA CETALES; SCH- CES. A A A A BAI 996) TO EMBL CES. A A A 11 Censee 11 Censee 10 Itensee 11 Censee 134473; 334473; 334473; 334473; 334473; 71EIN. AA; 22785 AA; 22785 AA; 218;	645 1302
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Best Local 9
1369 KKLVQQVNMNLQSAIQGNAGISKELNELKGVIELLISTNYSSILEYVKKNSSESVRFSQL 1428
                                                                                                                                                 1297
                                                                                                                                                                                                        1240 GQMR--DIYEKLKKIAEELKEGTVNELKDANEKANKVE-PEPERNIIGHVLERITVEKDK 1296
                                                                                                                                                                                                                                                                                      1201
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SEQUENCE
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DOMAIN
                                                                                                                                                                                                                                                                                                                                              1150 TSNKNEILKSVKEVEDKLNLVEQNEDYKKVKNPENEKQLEAIRGSMSKLKE----- 1201
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RBI_PLAVB STANDARD; PRT; 2869 AA. 000798; 01-APR-1993 (REL. 25, CREATED) 01-APR-1993 (REL. 25, LAST SEQUENCE UPDATE) 01-OCT-1996 (REL. 34, LAST ANNOTATION UPDATE) RETICULOCYTE BINDING PROTEIN 1 PRECURSOR.
                                342 PTLPESIIPNLQKAAK---SVGRDFNN-----FITTDNS-------
                                                                                                                                                                                                                                                                                                            111 IVLVCTFVIVPRVDAVDALKTCACLLKECRIELAKCIANPSCAANVACLQTCNNRPDETE 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MALARIA; RECEPTOR; SIGNAL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EMBL; M88097; G160626; -. HSSP; P36956; 1AM9.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CELL 69:1213-1226(1992)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GALINSKI M.R., MEDINA C.C., INGRAVALLO P., BARNWELL J.W.; "A reticulocyte-binding protein complex of plasmodium vivax
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A. MEDLINE; 92315338.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EUKARYOTA; ALVEOLATA; APICOMPLEXA; HAEMOSPORIDA; PLASMODIUM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SIGNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -i- FUNCTION: INVOLVED IN RETICULOCYTE ADHESION. SPECIFICALLY BINDS TO HUMAN RETICULOCYTE CELLS.
-i- SUBUNIT: HOMODIMER (POTENTIAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PLASMODIUM VIVAX (STRAIN BELEM).
                                                                                                                                                                                                                                                                                                                                                                                                                         hes 283;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -!- SUBCELLULAR LOCATION: MEMBRANE-BOUND.
                                                                                                                                                                                                                                                                                                                                                                               57 TSYKTSSFSDSSHCKDKSQICSIDTSFEEI-----ORFDLKRGMTLILEKQWRQFIQLA 110
                                                                                                    PDLPGALYNHDNEFLHYQDDWYILSSQIENKPDDYIFVYYRGRN-DAWDGYGGSVIYTRS 341
                                                                                                                                                                     SGKWYITSGLNPTFDAFDCQLHEF--HMENDKLVGNLTWRIKTLDGGFFTRSAVQTFVQD 282
                                                                                                                                                                                                                                        CQIKCGDLFE--NSVVDQFNECAVSRKKCVPRKSDVGEFPVPDRNA---VVQNFNM-KDF 224
                                                                                                                                        AGK--VVEEMNSLKTKIEKLIQETSDDSQNELVTTSITKHLENAKG
                                                                                                                                                                                                                                                                             -----VINKHVSEMTQLESTANTLK-----SNAKGKENEHDLEELN----KTK 1239
                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative 242;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2869 AA; 330213 MW; 2BD43E2C CRC32;
                                                                 ----YED-----EM 1368
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2807
2826
2869
1032
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17.4%;
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                                                                                                                                                                                                                                                                                                                                                                                                                   Score 155.5; DB 1;
Pred. No. 0.59;
2; Mismatches 573;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CELL ATTACHMENT SITE (POTENTIAL).
CELL ATTACHMENT SITE (POTENTIAL).
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CYTOPLASMIC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EXTRACELLULAR
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                                                                                                                                                                                                                                                                                                                                                                                                                 Indels 529; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 2869;
                                    --- 373
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416 ENTLEGENCIODEENEVRILESENEILN
416 EMTLFQRILLEGFKELQODEENFVRELSKEEK 487 ALTFWEE-SEKFKQMCSSHMENAKGKKKIE 486
416 EMTLFQRLLEGFKELQODEENFVRELSKEEKEII 487 ALTFWEE-SEKFKQMCSSHMENAKEGKKKIEVLH 488 ALTFWEE-SEKFKQMCSSHMENAKEGKKKIEVLH 493 VGSKLPGHKRFSWGWEDYFGSIVVAKICSSRRII 544 SILQIDNCRQQLDSVISNIGRVKQNALQYFDS- 613 TCTCLLKECRLELAKCISNPACAANVACLQTO 613 TCTCLLKECRLEITVQNEMSRINVEEGSLTD: 604 SILQIDNCRQQLDSVISNIGRVKQNALQYFDS- 613 TCTCLLKECRLEIAKCISNPACAANVACLQTO 1
416 EMTLFQRLLEGFKELQODEENFVRELSKEEKEII 487 ALTFWEE-SEKFKQMCSSHMENAKEGKKKLEXLH 488 ALTFWEE-SEKFKQMCSSHMENAKEGKKKLEXLH 498 VGSKLPGHKRFSWGWEDYFGSIVVAKICSSRRII 544 HAFHTVEAQVDKTKAFCESIVAYVTKMINLENES 493 VGSKLPGHKRFSWGWEDYFGSIVVAKICSSRRII 553 NLSPAHSINQNVPKGNSGCKFPKDVALMVWEKW 553 NLSPAHSINQNVPKGNSGCKFPKDVALMVWEKW 554 SLQIIDNCRQQLDSVLSNIGRVKQNALQYFDS 613 TCTCLLKECRLELAKCISNPACAANVACLQTO 614 SLLQIIDNCRQQLDSVLSNIGRVKQNALQYFDS 615 TCTCLLKECRLELAKCISNPACAANVACLQTO 616 TCTCLLKECRLELAKCISNPACAANVACLQTO 617 NECAVSRKKCVPR-KSDVGDFPVPDPSVLVQKFI 1
416 EMTLFORLLEGFKELQODEENFVRELSKEEKEII : : : : : : :
416 EMTLFQRLLEGFKELQODEENFVRELSKEEKEII
416 EMTLFORLLEGFKELQODEENFVRELSKEEKEII
416 EMTLFQRLLEGFKELQODEENFVRELSKEEKEII 218 2
416 EMTLFORLL : :: 487 ALTFWEE-S 456 546 HAFHTVEAQ 493 VGSKLPGHK : : 599 -SAKL 553 NLSPAHSIN : : 614 SLLQIDNCF 613 TCTCLLKEC 613 TCTCLLKEC 670 NECAVSRKK
416 EMTLFORLL : :: 487 ALTFWEE-S 456 546 HAFHTVEAQ 493 VGSKLPGHK : 599 -SAKL 553 NLSPAHSIN : 644 SLLQIDNCF 613 TCTCLLKEC 613 TCTCLLKEC 613 TCTCLLKEC 614 FLLQIDNCF 670 NECANCKEKS 670 NECANCKEKS 670 NECANCKEKS 670 NECANCKEKS 670 NECANCKEKS 670 NECANCKES 6
416 EMTLFORLL : :: 487 ALTFWEE-S 456 546 HAFHTVEAG 493 VGSKLPGHK : 599 -SAKL 553 NLSPAHSIN : 553 NLSPAHSIN : 5644 SLLQIDNCF 613 TCTCLLKEG 613 TCTCLLKEG 613 TCTCLLKEG 614 GLADKRKS 670 NECANDKRKS
416 EMTLFORLL : :: 487 ALTFWEE-S 456 546 HAFHTVEAQ 493 VGSKLPGHK : : 599 -SAKL 553 NLSPAHSIN : : 553 NLSPAHSIN : : 5644 SLLQIDNCF 613 TCTCLLEC 613 TCTCLLEC 613 TCTCLLEC 614 SLAGAN : : 670 NECAVSRKK
416 EMTLEORLL : :: 487 ALTFWEE-S 456 546 HAFHTVEAQ 493 VGSKLPGHK :
416 EMTLEORLL 1 : : : : : : : : : : : : : : : : : : :
416 EMTLFORLL : :: 487 ALTFWEE-S 456 546 HAFHTVEAQ 493 VGSKLPGHK : 599 -SAKL
416 EMTLFQRLL : :: 487 ALTFWEE-S 456
416 EMTLFQRLL : :: 487 ALTFWEE-S

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Best Local Similarity
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TEGU_HSVSA STANDARD; PRT; 2469 AA.
Q01056;
01-APR-1993 (REL. 25, CREATED)
01-APR-1993 (REL. 25, LAST SEQUENCE UPDATE)
01-APR-1993 (REL. 25, LAST ANNOTATION UPDATE)
PROBABLE LARGE TEGUMENT PROTEIN.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NICHOLAS J., CAMERON K.R., COLEMAN H., NEWMAN C., HONESS R.W.;
"Analysis of nucleotide sequence of the rightnost 43 kbp of
"the presylinus saimiri (HVS) L-DNA: general conservation of genetic
organization between HVS and Epstein-Barr virus.";
VIROLOGY 188:296-310(1992)...
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HERPESVIRUS SAIMIRI (STRAIN 11).
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ALBRECHT J.-C., NICHOLAS J., BILLER D., CAMERON K.R., BIESINGER B., NEWMAN C., WITTMANN S., CRAXTON M.A., COLEMAN H., FLECKENSTEIN B., HONESS R.W.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GAMMAHERPESVIRINAE
                                                                                                                                                                                                                                  EMBL; X64346; G60385; -. EMBL; M86409; G330993; -. PIR; H36812; H36812.
                                                                                                                                                                                                                                                                                                          use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email.to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                               This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A. MEDLINE; 92230228.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              "Primary structure of the herpesvirus saimiri genome."; J. VIROL. 66:5047-5058(1992).
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                                                                                                                                                                                                                   SEQUENCE
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                                                     178
                                                                                    271 FTRSAVQTFVGDPDLPGALYNHDNEFLHYQDDWYILSSQIENKPDDYIFVYYR-----
                 324 -GRNDAWDGYGGSVIY-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                        FUNCTION: TEGUMENT PROTEIN.
SIMILARITY: BELONGS TO FAMILY THAT GROUPS TOGETHER HSV-1 UL36,
EHV-1 24, EBV BPLF1, HVS-1 64, VZV 22, AND HCMV UL48.
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                                                 FSTSNVNDAIEYLSPPNVQYT--GSFLYFVPKEYIGHSH-----YIMNHYRVINYEKL 228
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                                                                                                                              Conservative
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                                                                                                                         %; Score 155; DB 1; Length 2469;
%; Pred. No. 0.51;
208; Mismatches 497; Indels 39
-----TRSPTLPESIIPNLQKAAKSVGRDFNNFI 367
                                                                                                                                                                                                                       1B72F5F9 CRC32;
                                                                                                                              Indels 396;
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      KFVEEVLESVKNLKEAKLKSLLPNGPVFTPPKFDWIHYYESNVNFHLKTINLPKVSTVAH 1184
                                                                                      -----KIQSAFQDLNFSILI------PDDWLSL-AKEYTRPKSTLFTVIGPILL 1124
                                                                                                                                                                                                           PSVLVQNF--NISDENGKWYITSGLNPTFDAFDCQLHEFHTEGDN-KLVGNISWRIKTLD 1206
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                                                                                                                             SGFFTRSAVOKFVQDPNQPGVLYNHDNEYLHYQDDWYILSSKIENKPEDYIF-----VYY 1261
                                                                                                                                                                  PSRDVKTFIQNAPSMKAKQYAKKALKDQIQAMEIDVDPESVIEDNIKANGQKAWQ-----
                                                                                                                                                                                                                                                         --TAVDRPLKRELYNVIRKLQKQLKTLLEQQEFDNW------
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                                               -----PELEKAAK 1296
                                                                                                                                                                                                                                                       --KMEVDSF-VPT 1027
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RI SUBMITTED (OCT-1996) TO EMBL/GENBANK/DDBJ DATA BANKS.

CC -:- FUNCTION: MUSCLE CONTRACTION.

CC -:- SUBUNIT: MUSCLE MYOSIN IS A HEXAMERIC PROTEIN THAT CONSISTS OF 2

CC -:- SUBUNIT: MUSCLE MYOSIN IS A HEXAMERIC PROTEIN THAT CONSISTS OF 2

CC -:- BADY CHAIN SUBUNITS (MIC), 2 ALKALI LIGHT CHAIN SUBUNITS (MIC)

CC -:- SUBCELLULAR LOCATION: THICK FILAMENTS OF THE MYOFIBRILS.

CC -:- DOMAIN: THE RODLIKE TAIL SEQUENCE IS HIGHLY REPETITIVE, SHOWING

CC CYCLES OF A 28-RESIDUE REPEAT PATTERN COMPOSED OF 4 HEPTAPEPTIDES,

CC CYCLES OF A 28-RESIDUE REPEAT PATTERN COMPOSED OF 4 HEPTAPEPTIDES,

CC CHARACTERISTIC FOR ALPHA-HELICAL COILED COILS.

CC CHARACTERISTIC FOR ALPHA-HELICAL COILED COILS.

CC -!- PTM: TWO CYSTEINE RESIDUES IN THE SI DOMAIN ARE SELECTIVELY

CC ALKYLATED AND ARE REQUIRED FOR MYOSIN ATPASE ACTIVITY.

CC ALKYLATED AND ARE REQUIRED FOR MYOSIN ATPASE ACTIVITY.

CC -:- SEACH MYOSIN HEAVY CHAIN CAN BE SPLIT INTO 1 LIGHT MEROMYOSIN (LMM)

CC AND 1 HEAVY MEROMYOSIN (HMM). IT CAN LATER BE SPLIT FURTHER INTO

CC 2 GLOBULAR SUBERRAGNENTS (S1) AND 1 ROD-SHAPED SUBFRAGMENT (S2).

CC -:- THE CARDIAC ALPHA ISOFORM IS A 'FAST' ATPASE MYOSIN, WHILE THE

CC -:- SIMILARITY: BELONGS TO THE MYOSIN HEAVY CHAIN FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT
MYSB_PIG
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                                                                                                                                                                                                                                                PFAM; PF00063; myosin_head; 1. PFAM; PF00612; IQ; 1.
                                                                                                                                                          DOMAIN
                                                                                                                                                                                      ATP-BINDING; METHYLATION; ALKYLATION; MULTIGENE FAMILY DOMAIN 1 838 GLOBULAR HEAD (S1).
                                                                                                                                                                                                                                  MYOSIN;
                                                                                                                                                                                                                                                                                          EMBL; U75316; G1698895;
                                                                                                                                                                                                                                                                                                                                                                          the European Bioinformatics Institute. There are no resuse by non-profit institutions as long as its content
                                                                                                                                                                                                                                                                                                                                                                                                              This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation -
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15-DEC-1998 (REL. 37, LAST SEQUENCE UPDATE)
15-DEC-1998 (REL. 37, LAST ANNOTATION UPDATE)
MYOSIN HEAVY CHAIN, CARDIAC MUSCLE BETA ISOFORM.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EUKARYOTA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STRAIN-DOMESTICA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A.
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                                                                                                                                                                                                                      MUSCLE PROTEIN; COILED COIL; THICK FILAMENT; ACTIN-BINDING
                                      1 838
839, 1935
780 802
839, 1935
178 185
655, 677
757, 771
129 129
695 695
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    AA;
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    223109
              METHYLATION (TRI-) (POTENTIAL).
ALKYLATION (SH-1) (POTENTIAL).
ALKYLATION (SH-2) (POTENTIAL).
                                                                        ACTIN-BINDING ACTIN-BINDING.
                                                                                                          COILED COIL (POTENTIAL). ATP (POTENTIAL).
                                                                                                                                                                    RODLIKE TAIL (S2 AND LMM DOMAINS)
F072F29E CRC32;
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(See http://www.isb-sib.ch/announce/
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1	EK 122	EMNKKREAEFQKMRRDLEEATLQHEATAAAL	1162	Db
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1	: : ISERLEEAGGATSVQI 116	: :::	1103	рь
	H	EPPLVERLEKKVEEGERT	858	VΩ
2	RLKKKDFELNALNARIEDEQALGS 110:	KVRMDLERAKRKLEGDLKLTQESIMDLENDKQQLDE	1043	Дb
	RDFNTFIKTDNTCGP 857	SAVLPESIIPELQTAAQKVG	823	Qy
2	DDLAGSLEQEK 104	: :: EKKALQEAHQQALDDLQAEEDKVNTL	994	Db
	FVYYKGRNDAWDGYGGSVLYTR 822	QDPKYPGILYNHDNEYLLYQDDWYILSSKVENSPEDYIFVYYKG	763	Qy
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	PACAANVACLQTCNNRPDETECQIKCGDLFE 662	ALKTCTCLLKECRLELAKCISNPACAANVACI	610	P Qy
	PWMKLYFKIKPLLESAETEKEMA 850	WW-	804	Db
	AKTAIV	NLSPAHSINQNVPKGNSGCKFPKDVALMVWEKWGQF	553	Qy
	RIITRIQAQSRGVLSRMEFKK 803	LGSLDIDHNQYKFGHTKVFFKAGLLGLLEEMRDERLSR	746	Дb
	RKSPRICCGLDSRGLQLFSHGKH 552	SKLPGHKRFSWGWEDYFGSIVVAKICSSRRIPRYF	493	Qy
	LNPAAIPEGQFIDSRKGAEKL 745	NPLVMHQLRCNGVLEGIRICRKGFPNRILYGDFRQRYRILNP	686	ДĎ
	RKLRMALAPHSNFLANHETIKYY 492	ILNELQMEAT-EVEKLFGRALPIR	448	Qy
	-HPHFVRCIIPNETKSPGVID 685	QTVSALH-RENLNKLMTNLRST	645	Дb
	DEENFVRELSKEEKE 448	LIKEAVEIEEEVEKEVEKVRDTEMTLFQRLLEGFKELQQD	394	Qy
	AGADTP-VEKGKGKAKKGSSF 644	LQKNKDPLNETVVDLYKKSSLKLLSNLFANY	594	Дb
	CGPEP		335	Qγ
	ALIHYAGTVDYNIIGW 594	TDMTFKAKLYDNHLGKSNNFQKPRNIKGRPEAHF	544	Db
	IFVYYRGRNDAWDGYGG 334	QDPDLPGALY-NHDNEFLHYQDDWYILSSQIENKPD-DY	281	Qy
	IDLIEKPMGIMSILEEECMFPKA 543	QQFFNHHMFVLEQEEYKKEGIEWEFIDFGMDLQACIL	486	Вþ
	TF 280	VGNLTWRIKTLDGGFFTRSAVQTF	256	Qy
	FEIFDENSFEQLCINETNEKL 485	: : :	429	Дb
	FDAFDCQLHEFHMENDKL 255	GKWYITSGLNPT	217	Qy
	NEYVTKGQNVQQVMYATGALA 428	PDGTEEADKSAYLMGLNSADLLKGLCHPRVKVGNE	375	Dβ
	EFPVPDRN	PDETECQIKCGDLFENSVVDQFNECAVSRKKCVPRKSDVG	166	Qy
57	B 1; Length 1935; 555; Indels 459; Gaps	ch 2.0%; Score 148.5; D 1 Similarity 16.7%; Pred. No. 0.87; 248; Conservative 220; Mismatches	ery Ma st Loc tches	Ma Be

OF 1310-1935 FROM N.A.	
RY SEQUENCE OF 1-115 FROM N.A. RX MEDIANE; 8926445., RA YAMAUCHI-TAKIHARA K., SOLE M.J., LIEW J., ING D., LIEW CC.; RA TAMAUCHI-TAKIHARA K., SOLE M.J., LIEW J., ING D., LIEW CC.; RT "Characterization of human cardiac myosin heavy chain genes."; RI PROC. NATL. ACAD. SCI. U.S.A. 86:3504-3508(1989). RN [4]	
heavy chain gene."; NUCLEIC ACIDS REs. 18:3647-3651(1990).	
LIEW CC	
SEQUENCE FROM N.A. MEDLINE: 90301495.	
"The compare GENOMICS	
JAENICKE T., DIEDERICH K.W., HAAS W., SCHLEICH J., LICHTER P., PFORDT M., BACH A., VOSBERG H.P.;	
SEQUENCE FROM MEDLINE; 91065	
EURAATOTA; METAZOA; CHURDATA; VERTEBRATA; RAMMADIA, BOTHERT PRIMATES; CATARRHINI; HOMINIDAE; HOMO.	
MYH OR MYHCH. HOMO SAPIENS (HUMAN). THE THE PROPERTY OF THE PR	
15-DEC-1998 (REL. 37, LAST ANNOTATION UP MYOSIN HEAVY CHAIN, CARDIAC MUSCLE BETA	
01-OCT-1989 (REL. 12, CREATED) 01-JUN-1994 (REL. 29, LAST SEQUENCE UPDAI	
MYSB_HUMAN P12883: O14904:	
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- ⊟	
'EEIEEEVEKEVEKVGRTEMTLFQRLAEGFN	
RENKNLQEEISDLTEQLGSSGKTIHELEKVRKQ	
STIPELEKAAKS	
Db 1439 AAALDKKQRNFDKILAEWKQKYEESQSELESSQKEARSL 1477	
NKPE	
Db 1403AVEAVNAKCSSLEKTKHRLQNEIEDLMVDVERSNAA 1438	
QY 1157 FNISDFNGKWITTSGLNPTFDAFDCQLHEFHTEGDNKLVGNISWRIKTLDSGFFTRSAVQ 1216	
Db 1371 WRT KYETDAIQRTEELEEAKKKLAQRLQDAEE 1403	
CQIKCGDLFENSVVDEFNECA	
1313	
1037 KELTAPLLLKLYGVLACAFLIVPSADAVDALKTCACLLKGCRIELAKCIANPA	
:: :	
TTGGRSSRPLSAFRSGFSKGIFDIVPLPSKN	

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, REPRESENTED A CONTRACT OF A 
                WATKINS H., THIERFELDER L., ANAN R., MCKENNA W., SEIDMAN G., SEIDMAN G., "SEIDMAN G." Independent origin of identical beta mutations in hypertrophic cardiomyopp
                                                                                                                                                                "Characteristics and prognostic implications of myosin mutations in familial hypertrophic cardiomyopathy."; NEW ENGL. J. MED. 328:1108-1114(1992).
                                                                                                            MEDLINE;
                                                                                                                                                                                                                                           SEIDMANN C.E.,
                                                                                                                                                                                                                                                                                                                                                                                                                       GEISTERFER-LOWRANCE A.A.T., MCKENNA W., SEIDMAN C.E., S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      "Missense mutation of the beta-cardiac hypertrophic cardiomyopathy."; AM. J. MED. GENET. 58:267-276(1995).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDLINE; 90035000 HIRA ARAI S., MATSUOKA R., HIRA IMAMURA S.-I.,
                                                                                                                                                                                                                                                                WATKINS H., ROSENZWEIG A.,
                                                                                                                                                                                                                                                                                                                                                          cardiac myosin heavy chain gene missense CELL 62:999-1006(1990).
                                                                                                                                                                                                                                                                                                                                                                                         "A molecular basis for familial hypertrophic cardiomyopathy: a beta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              "Construction of a human ventricular cDNA library and characterization of a beta myosin heavy chain cDNA cl
                                                                                                                            VARIANTS HCM GLN-403; CYS-453;
                                                                                                                                                                                                                                                                                                                  VARIANTS
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HOSODA S., MOMMA K.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MEDLINE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   "Missense mutations
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FANANAPAZIR L., DALAKAS M.C.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VARIANTS HCM GLU-256 AND ARG-741
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ARNOLD
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "Characterization of diverse forms of myosin heavy chain expressed adult human skeletal muscle."; NUCLEIC ACIDS RES. 14:2951-2969(1986).
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SAEZ L., LEINWAND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             "Identification of three developmentally controlled
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tations in the beta myosin heavy-chain
in hypertrophic cardiomyopathy,
ACAD. SCI. U.S.A. 90:3993-3997(1993).
                                                                                                                                                                                                                                              SEIDMANN J.G.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LIEW C.-C.;
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                            G., SEIDMAN C.E.;
identical beta cardiac myosin heavy-chain
                cardiomyopathy."
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                                                                                                                               ARG-584
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Y., JOH-O K
                                                                             JARCHO J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                            TANIGAWA
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                                                                                                                                                                                                                                                              LEVI T.,
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                                                                             MATSUMORI A.,
                                                                                                                                                                                                                                                                MCKENNA
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REAR ARE BERRARA A
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ANAN R.,
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VECCHIC C., SHONO H., NAKAO S., TANAKA H., MARES A. JR., TOW
SPIRITO P., ROBERTS R., SEIDMAN J.G., SEIDMAN C.E.;
"Prognostic implications of novel beta cardiac myosin heavy mutations that cause familial hypertrophic cardiomyopathy.";
"Identification of a novel Ala797Thr mutation myosin heavy chain gene in hypertrophic cardion MUTAT. 6:197-198(1995).
                                                                                                                                                                                                                                                                                                                                                                                                                                                      TOWBIN J., SEIDMAN C.E., ROBERTS R.;
"Isolation of a de novo mutant myocardial beta
pedigree with hypertrophic cardiomyopathy.";
                                                                                    MOOLMAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GREVE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AL-MADAWI S., CHAMBERLAIN S., CLEIAND J., NIHOYANNOPOULOS P., GILLIGAN D., FRENCH J., CHOUDHURY L., WILLIAMSON R., OAKLEY C.; "Identification of a mutation in the beta cardiac myosin heavy chain gene in a family with hypertrophic cardiomyopathy."; BR. HEART J. 69:136-141(1993).
                                                                                                                                    VARIANT HCM THR-797.
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AL-MAHDAWI S., CHA
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"A missense mutation of cardiac beta-myosin heavy chain gene
to familial hypertrophic cardiomyopathy in affected Japanese
familiac ".
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"Differences in clinical expression of hypertrophic cardiomyopathy
associated with two distinct mutations in the beta-myosin heavy chain
gene. A 908Leu---Yal mutation and a 403Arg-->Gln mutation.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             "Novel missense mutation in cardiac beta myosin heavy chain g found in a Japanese patient with hypertrophic cardiomyopathy. BIOCHEM. BIOPHYS. RES. COMMUN. 188:379-387(1992).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              "Identification of a new missense mutation at Arg403, a hotspot, in exon 13 of the beta-myosin heavy chain gene hypertrophic cardiomyopathy.";
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MEDLINE; 93038688.
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"Identification of a new n
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                                                                                                                                                                                          CLIN. INVEST.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NE POSTONAN C.E., ROBERTS R.; COTTOMAN C.E., ROBERTS R.; COTTOMAN C.E., ROBERTS R.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     gene."
                                                                               J.C., BRINK P.A.,
                                                                                                                                                                                                                                                                                                                               94110336.
GREVE G.;
                                                                                                        96047159.
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                                                                                                                                                                                       93:280-285(1994)
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                                                                                 CORFIELD
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                                                                      V.A.,
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                      cardiomyopathy. ";
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                                                  in exon 21 of the
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Matches 238
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VARIANT HCM CYS-453.

WEDLINE: 96209901.

KO Y.-L., CHEN J.-J., TANG T.-K., CHENG J.-J., LIN S.-Y., LIOU Y.-C.,

KO Y.-L., CHEN J.-J., TANG T.-K., CHENG J.-J., LIN S.-Y., LIOU Y.-C.,

KOAN P., WU C.-W., LIEN W.-P., LIEW C.-C.;

"Malignant familial hypertrophic cardiomyopathy in a family with a

453Arg-->Cys mutation in the beta-myosin heavy chain gene:
coexistence of sudden death and end-stage heart failure.";

HUM. GENET. 97:585-590(1996).
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JESCHKE B., UHL K., WEIST B., SCHRODER D., MEITINGER T.,

DOHLEMANN C., VOSBERG H.-P.;

"A high risk phenotype of hypertrophic cardiomyopathy associated with
"A compound genotype of two mutated beta-myosin heavy chain genes.";
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                                       825 ---VLPESIIPELQTAAQKVG-----RDF-----NTFIKTDNTCGPE------PPLVE 863
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GDLKLTQESIMDLENDKQQLDERLKKKDFELNALNARIEDEQALGSQLQKKLKELQARIE 1116
                                                                                                                                                                                                        NPTFDAFDCQLHEFHTEENKLYGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHDN 776
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                                                                                  DDLQAEEDKVNTLTKAKVKLEQQV-----
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                                                                                                                                                                                                                                                                                       -----CAVSRK---KCVPRKSDVGDFPVPDPSVLVQKFDMKDFSGKWFITRGL 716
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative 207; Mismatches 529; Indels 434; Gaps
                                                                                                                                                                     -----HATENK-VKNLTEEMAGLD-----EIIAKLTKEKKALQEAHQQAL 1007
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ----HPHFVRCIIPNETKSPGVMDNPLVMHQLRCNGVL 699
                                                                                     ----DDLEGSLEQEKKVRMDLERAKRKLE 1056
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ----NHL 557
                                                                                                                                                                                                                                                                                                                                         924
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           817
                                                                                                                                                                                                                                                        969
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 -i - ADDITIONAL REGIONS OF LOWER HOMOLOGY TO THE REPEAT CONSENSUS (ALWAYS STARTING WITH PROLINE) ARE FOUND IN BOTH FLANKING 	388 -	
CROTUBULI OR OTHER COMPONENTS OF THE NUCL	88	
UNCTION: CONTROLS NUCLEAR MIGRATION. NUM1 SPECIFICALLY C HE INTERACTION OF THE BUD NECK CYTOSKELETON WITH THE PRE IVISIONAL G2 NUCLEUS PERHAPS BY RECOGNIZING G2-SPECIFIC	888	
petitive 31 kDa NUMAI protein."; GENET. 230:277-287(1991).	R R R R	
, KUENTZEL H.;	RA P	
2079907.	RX M	
ROM N C 283	RP S	
CETACEAE; SACCHAROMICE	RN C	
FUNGI; ASCOMYCOTA; H	0 C C	
RISOW.	GN N	
6 (REL. 34, LAST ANNOTATION UPDA	DH DH	
2 (REL. 24, CARRIED) 2 (REL. 24, LAST SEQUENCE UP	D I	
O COST OA COSTAGRO	A C	
TIM VPAST STANDARD: PRT: 2748 AA.	RESULT NUM1_Y	
612 LRVKKKMEGDLNEMEIQLSHANRMAA	Db 1	
382KEEME-FEDEIKMEASEVEKLFGK	Qy 1:	
552 EHEEGKILRAQLEFNQIKAEIERKLAEKI	Db 1:	
345 EKEVEKVGRTEMILFQRLAEGFNELKODEENFVRELS	0у 1:	
492 LEHLETFKRENKNLQEEISDLTEQLGSSGKTIHELEKVRKQLEAEKMELQSAL	Db 1,	
EKAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGERIIVK	Qy 13	
ARSLSTELFKLK	Db 14	
YILSSKIENK	Qy 12	
406 AVNAKCSSLEKTKHRLQNEIEDLMVDVERSNAAAAALDKKQRN 1448	Db 14	
71 GLNPTFDAFDCQLHEFHTEGDNK	Qy 11	
374KYETDATORTEELEEAKKKLAORLOEAEEAVE 1405	Db 13	
11 IKCGDLFENSVVDEFNE	Qy 11	
327 NALAHALQSARHDCDLLREQYEEETEAKAELQRVLSKANSEVAQWRT 1374	Db 13	
LLKGCRIELAKCIANPACA	Qy 10	
274TSQRAKLQTENGELSRQLDEKEALISQLTRGKLTYTQQLEDLKRQLEEEVKAK 1326	Db 12	
94 LPPIQSADLRTTGGRSSRPLSAFRSGFSKGIFDIVPLPSKNELK	0у 9	
232 TSNMEQIIKAKANLEKMCRTLEDQMNEHRSKAEETQRSVNDL 1274	Db 12	
34 ATEVEKLEGRALFIRKLMAVATHCFTSPCHDRIRFESSDDGIGRLGITRKE	оу 9	
176 RDLEEATLOHEATAAALRKKHADSVAELGEQIDNLQRVKQKLEKEKSEFKLELDDV 1231	11	
90PRDKEVTLFSKLFEGFKELQRDEENFLRELSKE	00	
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64 RLEKKVEEGERTIIKEVEEIEEEVE	Qy 8	

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Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches 283;
                               1123 YLVEHAKATNHHLLSD--SAYEELVKCKENPDVETLKEKSAKLGHTVVSNEAYSELEK-- 1179
                                                                                        1063 HAKATNHHLLSDSAYEELVKCKENPDVEFLKEKSAKLGHTVVSNEAYSELEKKLEQPSLE 1122
                                                                                                                                                  1003 TNHHLLSDSAYEDLVKCKENPDMEFLKEKSAKLGHTVVSNEAYSELEKKLEQPSLEYLVE 1062
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DOMAIN
SEQUENCE
 464 GRALPIRKLRMALAPHSNFLANHETIKYYVGSKLPGHKRFSWGWEDYFGSIVVAK-----
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                                                                                                                                                                              325 RND---AWDGYGGSV------IYTRSPTLPESIIPN-----LQKAAKSVGRDF--- 364
                                                                                                                                                                                                           949 YE-----DLVKCKENPDMEFLKEKSAKLGHTVVSNEAYSELEKKLEQPSLEYLVEHAKA 1002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EMBL; X61236; G4072; -. PIR; S19052; S19052. SGD; L0001287; NUM1.
                                                                                                                                                                                                                                         276 VQTFVQDPDLPGALYNHDNEFLHYQ-------DDWYILSSQIENKPDDYIFVYYRG 324
                                                                                                                                                                                                                                                                       900 -----LKEKSAKLGHTVVSNEAYSELEKKLEQ-----PSLAYLVEHAKATDHHLLSDSA 948
                                                                                                                                                                                                                                                                                                                                                                         170
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PROSITE; PS50003; PH_DOMAIN; 1. PFAM; PF00169; PH; 1.
                                                                                                                                                                                                                                                                                                    216 VQNFNMKDFSGKWYITSGLNPTFDAFDCQLHEFHMENDKLVGNLTWRIKTLDGGFFTRSA 275
                                                                                                                                                                                                                                                                                                                                  857 EKKLEOPSLAYLVEHAKATDHHLLSDSAYEDLVKC-----KENSDV-EF----- 900
                                                                                                                                                                                                                                                                                                                                                                                           801 LAYLVEHAKATDH----HLLSDSAYEELVKCKENPDMEFLKEKSAKLGHTVVSNEAYSEL
                                                                                                                                                                                                                                                                                                                                                                                                                       116 TFVIVPRVDAVDALKTCACLLKECRIELAKCIANPSC-----AANVACLQTCNNRPDET 169
                                                                                                                                                                                                                                                                                                                                                                                                                                                       748 SAYEDLVKCKENPDV-----EFLKEKSAKLGHTVVSSEEYSELQRKYSELEKEVEQPS 800
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-!- SIMILARITY: CONTAINS 1 PH DOMAIN.
-!- CAUTION: IT IS UNCERTAIN WHETHER MET-1 IS THE INITIATOR.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   62 SSFSDSSHCKDKSQICSIDTSFEEIQRFDLKRGMTLILEKQWRQF-----IQLAIVLVC 115
                                                           --VEKVRDTEMTLFQRLLEGFKELQQDEENFVRELSKEEKEILNE--LQMEA-TEVEKLF 463
                                                                                                                    ----NNFITTDNS-----CGPEPPLVERLEKTAEEGEKLLIKEAV-EIEEEVEKE--- 409
                                                                                                                                                                                                                                                                                                                                                              ECQI-----KCGD--LFENSVVDQFNECAVSRKKCVPRKSDVGEFPVPDRNAV 215
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1.9%; Score 143; DB 1; Length 2748; nilarity 17.9%; Pred. No. 2.9; Conservative 231; Mismatches 582; Indels 48
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656
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         11.
12.
13 (INCOMPLETE).
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                                                                                                                                                                                                                                                                                                                                                                                             856
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1386 EFLDEIKMEASEVEKLEGKALP 1407	Qy
1998 KILVNESTHKRNEKLLSEPDSEFLTMKAKEQGLIIISEKEYSELRDQIDRPNLDVLKEKA 2057	Db
1331 RIIVKEVEEIEEEVEKEVEKVGRTEMTLFQRLAEGFNELKQDEENFVRELSKEEM 1385	Qy
1951 HPTVIHLSERHLLLNKVLVDRNDFATMSRSIEKPTIDFLSTKALSMG- 1998	Db
1271 YGGAVVYTRSSVLPNSIIPELEKAAKSIGRDESTFIRTDNTCGPEPALVERIEKTVEEGE 1330	Qy
1897 SEKIDHIYVPLSEYNLMVTNYRNPSLSYLKEKAVLNNHILIKEDDYKNILAVSE 1950	Db
1230NHDNEYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDAWDG 1270	Qу
1856 PNFDYLKDSLNK	DЬ
1174 PTFDAFDCQLHEFHTEGDNKLVGNISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLY 1230	Qy
185	Дb
1115 DLFENSVVDEFNECAVSRKKCVPRK-SDLGEFFAPDPSVLVQNFNISDFNGKWYITSGLN 1173	Qy
	Db
1062DAVDALKTCACLLKGCRIELAKCIANPACAANVACLQTCNNRPDETECQIKCG 1114	Qy
	В
ELKELTAPLLLKLVGVLACAFLIVPSA	Qy
PD 1	DЪ
٠ 🗀	Qy
1617 LEKPIVDNASKNDVLNICSKFSLVPLSTEEYDNWRKEHTKILNILGDPSIDFLKEKCEKY 1676	Дb
912 -EENFLRELSKEEMDYLDGLKMEATEVEKLFGRALPIR 948	Qy
NLPN 1	ДЬ
GERTIIKEVEEIEEEVEKVRDKEVTLFSKLFEGFKELQRD 9	Qy
15	Db
AQKVGRDENTFIKTDNTC 855	Qy,
1483 EPNEYLDINRIATTPSKEEIDNFCKQIGCYALDSKEYERLKNSLENPSKKFIEENAALLD 1542	Db
774 HDNEYLD 798	Qy
1436 DVELLRSKLKGYHIIDTTTYNELVSNFNSPTLKFIEEKAKSKGYRLI 1482	Db
724 DCQLHEFHTEENKLYGNLSWRIRTEDDGGFFTRSAVQKEVQD-PKYPGILYN 773	Qy
1378 EYLVKHAEQIQSKIISISDENTLANDSMEDMASKLQKLEYQIVSNDEYIALKNTMEKP 1435	Dρ
671 ECAVSRKKCVPRK-SDVGDFPVPDPSVLVQKEDMKDFSGKWFITRGLNPTFDAF 723	Qy
1328 LSDSAYEDLVKCKENPDMEFLKEKSAKLGHTVVSNKEYSELEKKLEQPSL 1378	Db
67	Qу
QPSLEYLVEHAKATNHHL 1	Db
565 PKGNSGCKFPKDVALMYWEKWGQFAKTAIVAIFILSVASKADAVDALKTCTCL 617	Qy
YLVEHAKATDHHLLSDSA	Db
	Qy
1179KLEQPSLAYLVEHAKATDHHLLSDSAYEDLVKCKENPDV 1217	Db

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2058

AIFDSIIVENIEYQQLVNTTSP

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MYSB_RAT
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EUR. HEART J. 5:181(1984).

EUR. HEART J. FORTHER L. ELEXANT L. 1944

EUR. HEART J. FORTHER L. ELEXA
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 "Complete nucleotide sequence of full length cDNA for cardiac myosin heavy chain.";
NUCLEIC ACIDS RES. 17:7529-7530(1989).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RATTUS NORVEGICUS (RAT)
EUKARYOTA; METAZOA; CHO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             21-JUL-1986 (REL. 01, CREATED)
01-OCT-1989 (REL. 12, LAST SEQUENCE UPDATE)
15-DEC-1998 (REL. 37, LAST ANNOTATION UPDATE)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RODENTIA; SCIUROGNATHI;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EUKARYOTA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MYOSIN HEAVY CHAIN, CARDIAC MUSCLE BETA ISOFORM
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MEDLINE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE OF 1524-1935 FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MEDLINE; 90016823
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                                                                                                                   This
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MAHDAVI V., LOMPRE A.M., CHAMBERS A.P., NADAL-GINARD B.; "Cardiac myosin heavy chain isozymic transitions during
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MEDLINE; 85179510
                                                                                                                                                                                                                                                                                                            -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE OF 1871-1935 FROM N.A. STRAIN=WISTAR; TISSUE=HEART;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NATURE 297:659-664(1982).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             "Molecular characterization
                                                                                            between
  entities
                         modified
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         under pathological conditions are regulated at the level of mRNA
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  and this statement is not removed. Usage by and for commercial requires a license agreement (See http://www.isb-sib.ch/announce/
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       heart.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CHORDATA; VERTEBRATA; MAMMALIA; EUTHERIA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MURIDAE; MURINAE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TAYLOR D.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           O
fr
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             two myosin heavy chain
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chain sequences
differences.";
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                                                                                                                                                                                                                                                                        VMHQLRCNGVLEGIRICRKGFPNRILYGDFRQRYRILNPAAIPEGQFIDSRKGAEKLLGS
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ALXYLATION (SH-2) (POTENTIAL).
IRK -> VRR (IN REF. 3).
D -> H (IN REF. 3).
N -> K (IN REF. 3).
T -> N (IN REF. 3).
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Q1-QCT-1994 (REL. 27, CREATED)
Q1-JUN-1994 (REL. 29, LAST SEQUENCE UPDAT
15-JUL-1998 (REL. 36, LAST ANNOTATION UPF
MYOSIN-LIKE PROTEIN MLP1.
MLP1 OR YKR095W OR YKR415.
SACCHAROMYCES CEREVISIAE (BAKER'S YEAST)
SACCHAROMYCES CEREVISIAE (BAKER'S YEAST)
       EUKARYOTA; FUNGI;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEFKLELDD----VTSNMEQIIKAKANLEKM-----CRT--LEDQMNEHRS-----KAE 1264
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              E-----PPLVERLEKKVEEGERT------IIKEVEEIEEEVEK------
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MKDFSGKWFITRGLNPTFDAFDCQLHEFHTEENKLVGNLSWRIRTPDGGFFTRSAVQKFV 762
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -------EIIVKLT
                                                                                                                                                                                          STANDARD;
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ASCOMYCOTA; HEMIASCOMYCETES; SACCHAROMYCETALES;
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                                                                                             LAST ANNOTATION UPDATE)
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447 EILNELOMEATEVEKLFGRALÞIRKLR-MALAPHSNFLANHETIKYYVGSKLÞGHKRFSW 505
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BOU G., ESTEBAN P.F., BALADRON V., GONZALEZ G.A., CANTALEJO J.G., REMACHA M., JIMENEZ A., DEL REY F., BALLESTA J.P.G., REVUELTA J.L., "The complete sequence of a 15,820 bp segment of Saccharomyces cerevisiae chromosome XI contains the UBI2 and MPL1 genes and three
                                  283 DSLNSEKQEF-SAEMSLKQRLVDLLESQLNAVKEELNSIRELNTAKVIADDSKKQTPENE
                                                                                                      235 VILDIRNELNRIRNDFQMERTNNDVLKQKN-----NELSKSLQ--EKLL--EIKGLS
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 new open reading frames.";
YEAST 9:1349-1354(1993).
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                                                                                                                                                                                                                                                                            242 DCQLHEFHM----END------KLVGNLTWRIKTLDGGFFT-----RSAVQTFVQDPDLPG 287
                                                                                                                                                                                                                                                                                                                                                                                                                   171 CQIKCGDLFENSVVD------QFNEC------AVSRKKCVPRKSDVGEFP 208
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DOMAIN
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"A new yeast gene with a myosin-like heptad repeat structure.";
MOL. GEN. GENET. 237:359-369(1993).
                                                                                                                                                                                                                                                                                                                                                209 VPDRNAV-----TFDAF 241
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                                                                                                                                                                                                                                                                                                                          89
                                                                                                                                                                                                                                                                                                                                                                                  30 CSLEQVKSFDGDVVKHLNDKLLQFNELKSENLKVTVSFDELKASSLKKIDGLKTEM-ENV 88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Local
                                                                   EEVEKEVEKVRDTEMTLFQR----LLEGFKELQQDEENFVREL-----SKEEK
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                                                                                                                                        IIPNLQKAAKSVGRDF-----NNFITTDNSCGPEPPLVERLEKTAEEGEKLLIKEAVEIE 402
                                                                                                                                                                             -----LQSNNDW--LEKELRSKNEQYL--SYRQKTD-----
                                                                                                                                                                                                            ALYNHDNEFLHYQDDWYILSSQIENKPDDYIFVYYRGRNDAWDGYGGSVIYTRSPTLPES
                                                                                                                                                                                                                                           DERLKEIELVRVENNRSNSECKKLRSTIMDLETKQQGYITNDLNSRTELERKTQELTL--
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IN; HEPTAD REPEAT PATTERN; COILED COIL; DNA REPAIR
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17.5%; Pred. No. 3.6;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TILKQDSKTHETLNEYVSCKSKLSIVETELLNLKEE-----QKLRVHLEKNLKQEL 770
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                                                                                                                              ELEKAAKSIGRDFSTF-----IRTDNTCGPEPALVERIEKTVEEGERIIVKEVEEIE 1341
                                                                                                                                                                                                                                                                                                                                                    KSEY-----ESKLSKIQNDL------DQQTIYANTAQNNYEQELQKHADVSKTISELRE 1062
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                                           EEVEKEVEKVGRTEMTLFQRLAEGFNELKQDEENFVRELSKEEMEFLDEIKMEASEVE 1399
                                                                                       VAERDAKMIRQKISIMDVELQDARTKLDNS--
                                                                                                                                                                        --LSNSRIEDLSSQNKLLYDQIQIYTAADKEVNNSTNGPGLNNILITLRRERDILDTKVT 1162
                                                                                                                                                                                                                   WYILSSKIENKPE-----DYIFVYYRGRNDAWDGYGG-----AVVYTRSSVLPNSIIP 1289
                                                                                                                                                                                                                                                             QLHTY------KGQVKTLN---LSRDQLENALKENEKS---WSSQKESLLEQLD 1104
                                                                                                                                                                                                                                                                                                         QLHEFHTEGDNKLVGNISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLYNHDNEYLHYQDD 1241
                                                                                                                                                                                                                                                                                                                                                                                                                                          LEDKISLLKEQMFNL------NNELDLQKKGMEKEKADFKKRISILQNNNKEVEAV 1014
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EKL-NQLNLLRESNITL-----RNEL-ENNNNKKKELQSE----LDKLKQNVAPIE 1255
                                                                                         -RVEK---ENHSSIIQQHDDIM 1210
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Best Local
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GALLUS GALLUS (CHICKEN).
EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ARCHOSAURIA; AVES;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LEMAIRE C., HEILIG R., MANDEL J.L.;
"Nucleotide sequence of chicken dystrophin
NUCLEIC ACIDS RES. 16:11815-11815(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DYSTROPHIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     01-OCT-1989
01-NOV-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               P11533;
01-OCT-1989
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DMD_CHICK
                                                                                                                                                                                                                                                                                                                                                        PROSITE; PS00019; ACTININ_1; 1.
PROSITE; PS00020; ACTININ_2; 1.
PROSITE; PS01159; WW_DOMAIN_1; 1.
PROSITE; PS50020; WW_DOMAIN_2; 1.
PFAM; PF00307; actinin-binding; 1.
PFAM; PF00397; WW_rsp5_WWP; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     the European Bicinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entitles requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LEMAIRE C., HEILLG R., MANDEL J.L.;
"The chicken dystrophin cDNA: striking conservation of the C-terminal coding and 3' untranslated regions between man and chicken.";
EMBO J. 7:4157-4162(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TISSUE-MUSCLE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NEOGNATHAE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swigs Institute of Bioinformatics and the EMBL outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     -!- FUNCTION: MAY PLAY A ROLE IN ANCHORING THE CYTOSKELETON TO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MEDLINE;
                                                                                                                                                                                                                                   DOMAIN
                                                                                                                                                                                                                                                                                                        STRUCTURAL
                                                                                                                                                                                                                                                                                                                                  PFAM;
                                                                                                                                                                                                                                                                                                                                                                                                                   PROSITE; PS00019; ACTININ_1; PROSITE; PS00020; ACTININ_2;
                                                                                                                                                                                                                                                  DOMAIN
                                                                                                                                                                                                                                                                 DOMAIN
                                                                                                                                                                                                                                                                            DOMAIN
                                                                                                                                                                                                                                                                                          REPEAT.
                                                                                                                                                                                                                                                                                                                     HSSP;
                                                                                                                                                                                                                                                                                                                                                 PFAM; PF00435;
                                                                                                                                                                                                                                                                                                                                                                                                                                                            EMBL; X13369; G63370; -.
1983 TTFVMTESMTVETTYVPSTYLAEI-LQLLQALSEVEERLNSPVLQAKD-----------C
                                                                                                                                                                             SEQUENCE
                                                                                                                                                                                           VARIANT
                                                                                                                                                                                                         VARIANT
                                                                                                                                                                                                                        VARIANT
                          116
                                                                                71 KDKSQICSIDT:SFEEIQRFDLKRGM--TLI-LEKQWRQF------IQLAIVLVC 115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ACTIN-BINDING PROTEINS (SUCH AS ACTININ, DYSTROPHIN, ABP-120, ABP-180, OR BETA-FODRIN).
SIMILARITY: CONTAINS 1 WW DOMAIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PLASMA MEMBRANE.
SIMILARITY: THE ACTIN-BINDING DOMAIN IS OF A TYPE FOUND IN
                                                                                                                                                                                                                                                                                                                                                                                                                                                S02041; S02041
                        TFVIVPRVDAYDALKTCACLLKECRIELAKCIANPSCAANVACLQTCNNRPDETECQIKC 175
                                                      KKKEDLNAVNECAERLSKDGAAKAVEPTLVQLSKRWRDFESKFAQFRRLNYAQIQTVLED 1982
                                                                                                                                                                                                                                                                                                                    PF00569; ZZ;
Q01082; 1AA2
                                                                                                            245;
                                                                                                                         Similarity
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(REL.
(REL.
                                                                                                                                                                                                                                                                                                        PROTEIN; ACTIN-BINDING; CALCIUM-BINDING; CYTOSKELETON;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GALLIFORMES; PHASIANIDAE; PHASIANINAE; GALLUS.
                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STANDARD;
                                                                                                                                                                                                                                                                                                                                              spectrin; 22.
                                                                                                                                                                               A.1.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    12, CREATED)
12, LAST SEQUENCE UPDATE)
32, LAST ANNOTATION UPDATE)
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3000
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1869
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                                                                                                                         1.8%;
                                                                                                                                                                                422874 MW;
                                                                                                            196;
                                                                                                                                                                                         26 SPECTRIN-LIKE REPEATS.
WW DOMAIN.
CYS-RICH.
MISSING.
Q -> H.
K -> R.
                                                                                                                         Score 135; D
Pred. No. 12;
                                                                                                                                                                                                                                                                              ACTIN-BINDING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRT;
                                                                                                               Mismatches 482;
                                                                                                                                                                                  AF61A205 CRC32;
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                                                                                                                                       DB 1; Length 3660;
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                                                                                                             Indels 472;
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                                                                                                               Gaps
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Molecular genetic Characterization of a developmentally regulated RT human perinatal myosin heavy chain.";

L J. CELL BIOL. 108:1791-1797(1989).

C -: FUNCTION: MUSCLE CONTRACTION.

C -: SUBUNIT: MUSCLE MYOSIN IS A HEXAMERIC PROTEIN THAT CONSISTS OF 2

C HEAVY CHAIN SUBUNITS (MHC). 2 ALKALI LIGHT CHAIN SUBUNITS (MLC).

C AND 2 REGULATORY LIGHT CHAIN SUBUNITS (MLC-2).

C -: SUBCELLULAR LOCATION: THICK FILAMENTS OF THE MYOFIBRILS.

C -: SUBCELLULAR LOCATION: THICK FILAMENTS OF THE MYOFIBRILS.

C CYCLES OF A 23-RESIDUE REPEAT PATTERN COMPOSED OF 4 HEPTAPEPTIDES,

C CYCLES OF A 23-RESIDUE REPEAT COILED COILS.

C CHARACTERISTIC FOR ALPHA-HELICAL COILED COILS.

C CHARACTERISTIC FOR ALPHA-HELICAL COILED COILS.

C -: PIM: TWO CYSTEINE RESIDUES IN THE SI DOMAIN ARE SELECTIVELY

ALKYLATED AND ARE REQUIRED FOR MYOSIN ATPASE ACTIVITY.

C -: EACH MYOSIN HEAVY CHAIN CAN BE SPLIT INTO 1 LIGHT MEROMYOSIN (LMM)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 10
MYSP_HUMAN
ID MYSP_HUMAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
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FEGHALI R., LEINWAND L.A.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE OF 860-1937 FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              myosin heavy chains.
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KARSCH-MIZRACHI I., FEGHALI R., SHOWS T.B. JR., LEII
"Generation of a full-length human perinatal myosin
heavy-chain-encoding cDNA.";
GENE 89:289-294(1990).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  P13535; Q14910; P13535; Q14910; P13535; Q14910; P13535; Q14910; P1374N-1990 (REL. 13, CREATED) P15-JUL-1998 (REL. 36, LAST ANNOTATION UPDATE) P15-JUL-1998 (REL. 36, LAST ANNOTATION UPDATE) P15-JUL-1998 (REL. 36, LAST ANNOTATION UPDATE) P13535; P1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EUR. J. BIOCHEM.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           "Identification of three developmentally controlled isoforms of human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MEDLINE; 90235862
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE OF 502-1937 FROM N.A. TISSUE-SKELETAL MUSCLE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             JULLIAN E.H., KELLY A.M., POMPIDOU A.J., HOFFMAN R., SCHIAFFINO S., STEDMAN H.H., RUBINSTEIN N.A.; "Characterization of a human perinatal myosin heavy-chain transcript.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     HOMO SAPIENS (HUMAN).
EUKARYOTA; METASOA; CHORDATA; VERTEBRATA; MAMMALIA; EUTHERIA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ARNOLD H.H.
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EMBL; Z38133; G558669; -.

EMBL; X51592; G29466; -.

EMBL; Y00821; G34864; -.

EMBL; M35250; G531200; -.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MYOSIN; MUSCLE PROTEIN; COILED COIL; THICK FILAMENT; ACTIN-BINDING; ATP-BINDING; METHYLATION; ALKYLATION; HEPTAD REPEAT PATTERN;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DOMAIN
                                                                                                                                      133
                                                                                                                                                               282 AERSYHIFYQITSNKKPDLIEMLLITTNPYDYAFVSQGEITVPSIDDQEELMATDSAIDI 341
454 QPRQYFIGVLDIAGFEIFDFNSLEQLCINFTNEKLQQFFNHHMFVLEQEEYKKEGIEWTF 513
                                                        396
                                                                                                                                                                                                                      239 VRNDNSSRFGKFIRIHFGTTGKLASADIETYLLEKSRV-----TFQLK----
                                                                                                                                                                                                                                              43 IRSNN----GYFNSFRLFTSYKTSSFSDSSHCKDKSQICSIDTSFEEIQRFDLKRGMTLI 98
                                                                                                                                                                                             99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AND 1 HEAVY MEROMYOSIN (HMM). IT CAN LATER BE SPLIT FURTHER INTO 2 GLOBULAR SUBFRAGMENTS (S1) AND 1 ROD-SHAPED SUBFRAGMENT (S2). SIMILARITY: THE PERIODICITIES OF HYDROPHOBIC AND CHARGED RESIDUES, WHICH DICTATE THE ALPHA-HELICAL COILED-COIL STRUCTURE, ARE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CONSERVED.
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                                                     ADLLKALCYPRVK-VGNEYVTKGQTVQQVYNAVGALAKAVYEKMFLWMVTR-INQQLDTK 453
                                                                                                                                     ACLLKECRIELAKCIANPSCAANVACLQTCNN----RPDETECQIKCGDLFENSVVDQFNE 189
                                                                                 CAVSRKKCVPRKSDVGEFPVPDRNAVVQNFNMKDFSGK-----WYITSGLNPT----
                                                                                                           LGFTPEEKVSIYKLTGAVMHYGNMKFKQKQREEQAEPDGTEVADKA-----AYLQSLNS 395
                                                                                                                                                                                            LEKQWRQFIQLA----
                           -----FDAFDCQLHE---FHMENDKLVGNLTWRIKTLDGGFFTRSAVQ-TF
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80; Conservative
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1914
                                                                                                                                                                                                                                                                                        1.8%; Score 134.5;
17.0%; Pred. No. 5.5;
                                                                                                                                                                                                                                                                                                                                                 222762
                                                                                                                                                                                             ----IVLVCT-----FVIVPRVD-----AVDALKTC 132
                                                                                                                                                                                                                                                                             243;
                                                                                                                                                                                                                                                                                                                                                          ALKYLATION (SH-2) (POTENTIAL)
A-> R (IN REF. 2).
E-> Q (IN REF. 1 AND 4).
M-> N (IN REF. 3).
M-> H (IN REF. 3).
MC-> DGG (IN REF. 3).
E-> G (IN REF. 1 AND 4).
K -> Q (IN REF. 1 AND 4).
K -> Q (IN REF. 1 AND 4).
K -> DT (IN REF. 3).
E-> D (IN REF. 1 AND 4).
E-> D (IN REF. 1 AND 4).
EN-> AH (IN REF. 1).
                                                                                                                                                                                                                                                                                                                                                 MW;
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ACTIN-BINDING.
ACTIN-BINDING.
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ALKYLATION (SH-1) (POTENTIAL).
ALKYLATION (SH-2) (POTENTIAL).
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RODLIKE TAIL (S2 AND LMM DOMAINS).
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                                                                                                                                                                                                                                                                                                        DB 1;
                                                                                                                                                                                                                                                                                597;
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                                                                                                                                                                                                                                                                                                     Length 1937;
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P04932;

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                                                                                                                                                                                        TRANSMEMBRANE;
                                                                                                                                                                                                                              PFAM; PF00008; EGF; 1.
                                                                                                                                                                                                                                                                  EMBL; X03371; G929798; -.
                                                                                                                                                                                                                                                                                               entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REVISIONS, SEQUENCE FROM N.A.

PAN W., TOLLE R., BUJARD H.;

SUBMITTED (JUN-1995) TO EMBL/GENBANK/DDBJ DATA BANKS.

-!- SUBCELLULAR LOCATION: ATTACHED TO THE MEMBRANE BY A GPI-ANCHOR
                                                                                                                                                                                                                                                 PIR; A25120; SAZQK1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MACKAY M., GOMAN M., BONE STUNNENBERG H., BUJARD H.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 13-AUG-1987 (REL. 05, CREATED)
01-FEB-1996 (REL. 33, LAST SEQUENCE UPDATE)
01-OCT-1996 (REL. 34, LAST ANNOTATION UPDATE)
MEROZOITE SURFACE PROTEIN 1 PRECURSOR (MEROZOITE SURFACE ANTIGENS)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Plasmodium falciparum merozoites: studies
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               "Polymorphism of the precursor for the major surface antigens of Plasmodium falciparum merozoites: studies at the genetic level."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EUKARYOTA; ALVEOLATA;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1615 LRVKKKMEGDLNEMEIQLNHANRLAAESL 1643
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1413 K---CASLEKTKQRLQNEVEDLMLDVE-------RSNAACAALDKKQ 1449
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (PMMSA) (P190).
                                                                                                                                                                                                                                                                                                                                                                                                                                                            PTM: MEROZÓITE SURFACE ANTIGEN CONTAIN THE SEQUENCE OF 83 KD, KD AND 19 KD ANTIGENS WHICH ARE THE MAJOR SURFACE ANTIGENS OF MEROZOITES. THE MATURATION TAKE PLACE DURING SCHIZONT.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (POTENTIAL).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EHEEGKILRIQLELNQVKSEVDRKIAEKDEEIDQLKRNHTRVVETMQSTLDAEIRSRNDA 1614
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                                                                                                                                                                               MEROZOITE: POLYPROTEIN; REPEAT; SIGNAL; IBRANE; GPI-ANCHOR.
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                         POTENTIAL.
POTENTIAL.
POTENTIAL.
POTENTIAL.
                                                                                                     MEROZOITE SURFACE PROTEIN 1 TRIPEPTIDE SG(TP) REPEAT. MEMBRANE ANCHOR.
      POTENTIAL
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CARBOHYD
                                                                                                                        816 LLFNIQNNIPVMY----SMFDSLNNSLSQLFMEIYEKEMVCNLYKLKDNDKIKNLLEEAK
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                                          KV----STSVKTLSSSSMQPLSLTPQDKPEVSANDDTSHSTNLNNSLKLFENILSLGKNK
                                                                                KVGRDFNTFIKTONTCGPEP-PLVERLEKKVEEGERT-----IIKEVEEI-----
                                                                                                                                                              YIF------PESIIPELQTAAQ
                                                                                                                                                                                                       H------KY--ILVSHSTMNEKILKQ---YKITKEEESKLSSCDPLD
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46; Conservative 207;
-----EEEVEKVRDKEVTLFSKLFEGFKELQRDEENFLRELSKEEMDVLDGLK
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13-AUG-1987 (REL. 05, CREATED)
01-FEB-1996 (REL. 33, LAST SEQUENCE UPDATE)
01-FEB-1996 (REL. 33, LAST ANNOTATION UPDATE)
MEROZOITE SURFACE PROTEIN 1 PRECURSOR (MEROZOITE SURFACE ANTIGENS)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1107 TECQIKCGDLFENSVVDEFNECAVSRKKCVPRKSDLGEFPAPDPSVLVQNFNISDFNGKW 1166
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                                                                                                                                                                                                                                                     HOLDER A.A.;
SUBMITTED (MAR-1991) TO EMBL/GENBANK/DDBJ DATA BANKS.
-!- SUBCELLULAR LOCATION: ATTACHED TO THE MEMBRANE BY A GPI-ANCHOR
                                                                                                                                                                                                                                                                                                                                                                   "Primary structure of the precursor to the three major surface antigens of Plasmodium falciparum merozoites."; NATURE 317:270-273(1985).
                                                                                                                                                                                                                                                                                                                                                                                                                                                    HOLDER A.A., LOCKYER M.J., ODINK K.G., NICHOLLS S.C., HILLMAN Y., DAVEY L.S.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EUKARYOTA; ALVEOLATA; APICOMPLEXA; HAEMOSPORIDA; PLASMODIUM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               992 KILPPIQSADLRTTGGRSSRP---LSAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKLV 1048
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                                                                                                                                                                                                                                                                                                                                                                                                                                      FREEMAN R.R.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE FROM N.A. MEDLINE; 86014355.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -PNQPGVLYNHDNEYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDA-WDGYGGAVVYTR 1279
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                                                                                                                                                                                                                 PTM: MEROZOITE SURFACE ANTIGEN CONTAIN THE SEQUENCE OF 83 KD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SSVLPNSIIPELEKAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGERIIVKEVEE
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                                                                                                                                                                      KD AND 19 KD ANTIGENS WHICH ARE THE MAJOR SURFACE ANTIGENS MEROZOITES. THE MATURATION TAKE PLACE DURING SCHIZONT.
                                                                                                                                                                                                                                         (POTENTIAL).
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MALARIA; MEROZOITE; POLYPROTEIN; REPEAT; SIGNAL; GLYCOPROTEIN;
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                                                                                                                                                                                                                                                                                                                      508 NFEKMMGKRYS/KVEKL----THHNTFASYENSKHNL-EKLTKALKY---MEDYSLRNI
 746 RTPDGGFFTRSAVQKFVQDPKYPGILYNHD--NEYLLYQDDWYILSSKVEN-----SPED
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                                                                                                                                                                                                                                                                                                                                                                                                      VEKEVEKVRDTEMTLFQRLLEGFKELQQDEENFVRELSKEEKEILNEL-----QMEAT 457
                                                                                                                                                                                                                                                                                                                                                                                                                                                            PNLQKAAKSVGRDFNNFITTDNSCGPEPPLVERLEKTAEEGEKLLI-----KEAVEIEEE 404
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                                                                                                                                                                                                                                                                                                                                              EVEKLFGR--ALPIRKLRMALAPHSNFLANHETIKYYVGSKLPGHKRFSWGWEDY-FGSI 514
                                                                                                                                                                                                                                                                                                                                                                                                                                  PNGVTYPLSY-NDINNALNELNSFG----DLINPFDYTKEPSKNIYTDNERKKFINEIKEK 459
                              TPPAPVNNKTENVSKLDYLE-----
                                                                                                               ECQI-----KCGDLFENSVVDEFNECAVSRKKCVPRKSDVGDFPVPDPSVLVQ--
                                                                                                                                              NIHVPNSYKQENKQEPYYLIVLKKEIDKLKVFMPKVESLINEEKKNIKTEGQSDNSEPST
                                                                                                                                                                                                    KITKDENKPDEKILEV----SDIVKVQVQKVLLM-----NKIDELKKTQLILKNVELKH
                                                                                                                                                                                                                              -----KFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADAVDALKTCTCLLKECRLE- 625
                                                                                                                                                                                                                                                              VVEKEL----KYYK------NLISKIENEI---ETLVENIKKDEEQLFEK
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                                                                                    EGEITGQATTKPGQQAGSALEG---DSVQAQAQEQKQAQP-----PVPVPVPEAKAQVP
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                                                         -KFDMKDFSGKWFITRGLNPTFDAFDCQLHEFHTEENKLVGNLSWRI 745
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JANDRESKI M.A., SOLE M.J., LIEW C.-C.; "Sequence of cDNA encoding the Syrian hamster cardiac beta-myosin
                                                                                                                                                                                                      "Characterization and nucleotide sequence of the cardiac alpha-myosin heavy chain gene from Syrian hamster."; MOL. CELL. CARDIOL. 26:1155-1165(1994).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MESOCRICETUS AURATUS (GOLDEN HAMSTER).
EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; MAMMALIA; EUTHERIA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1292 VYRSLKKQLE---NNVMTFNVNVKDILNSRFNKRENFKNVLESDLIPYKD 1338
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RODENTIA; SCIUROGNATHI; MURIDAE; CRICETINAE; MESOCRICETUS
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RI heavy chain.";

RI NUCLEIC ACIDS RES. 16:4737-4737(1988).

C: FUNCTION: MUSCLE CONTRACTION.

C: SUBUNIT: MUSCLE MYOSIN IS A HEXAMERIC PROTEIN THAT CONSISTS OF 2

CE HEAVY CHAIN SUBUNITS (MHC), 2 ALKALI LIGHT CHAIN SUBUNITS (MLC)

CC AND 2 REGULATORY LICHT CHAIN SUBUNITS (MLC-2).

CC -!- SUBCELLUAR LOCATION: THICK FILAMENTS OF THE MYOFIBRILS.

CC -!- DOMAIN: THE RODLIKE TAIL SEQUENCE IS HIGHLY REPETITIVE, SHOWING

CC CYCLES OF A 28-RESIDUE REPEAT PATTERN COMPOSED OF 4 HEPTAPEPTIDES,

CC CHARACTERISTIC FOR ALPHA-HELICAL COLLED COILS.

CC -!- EACH MYOSIN HEAVY CHAIN CAN BE SPLIT INTO 1 LIGHT MEROMYOSIN (LMM)

CC AND 1 HEAVY MEROMYOSIN (HMM). IT CAN LATER BE SPLIT FURTHER INTO

CC 2 GLOBULAR SUBFRAGMENTS (S1) AND 1 ROD-SHAPED SUBFRAGMENT (S2).

CC -!- SIMILARIY: BELONGS TO THE MYOSIN HEAVY CHAIN FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches
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Best Local
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entitles requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
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304 YILSSQIENKPDDYIFVYYRGRND----AWDGYGGSVIYTRSPTLPESIIPNLQKAA-KS 358
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                                                                                                                                                                                                                                                                                                                                            NSADLLKGMCHPRVKVGNEYVTKGQNVQQVSYAIGALAKSVYEKMFN--WMVTR-INATL 446
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1934
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17.0%; Pred. No. 6.3;
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GLOBULAR HEAD (S1).
RODLIKE TAIL (S2 AND LMM DOMAINS).
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DLQAEED -> ALBARKT (IN REF. 2).

L -> V (IN REF. 2).

L -> V (IN REF. 2).

D -> N (IN REF. 2).

E -> D (IN REF. 2).

C -> R (IN REF. 2).

C -> R (IN REF. 2).
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ALKYLATION (SH-2) (
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STRAIN=F1B; TISSUE=LIVER; MEDLINE; 95115033.

SEQUENCE FROM N.A.

WANG R., SOLE M.J., CUKERMAN E., LIEW C.-C

SEQUENCE OF 962-1935 FROM N.A. MEDLINE; 88247788.

MYSB

MESAU

MYSB_MESAU

STANDARD;

PRT;

1934 AA

P13540; Q60540;
01-JAN-1990 (REL. 13, CREATED)
15-JUL-1998 (REL. 36, LAST SEQUENCE UPDATE)
15-DEC-1998 (REL. 37, LAST ANNOTATION UPDATE)
MYOSIN HEAVY CHAIN, CARDIAC MUSCLE BETA ISOFORM.

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RY "Zinc content of the Bacillus anthracis lethal factor.";

RY "Zinc content of the Bacillus anthracis lethal factor.";

RY "Zinc content of the Bacillus anthracis lethal factor.";

RY "Zinc content of the Bacillus anthracis lethal factor.";

RY "Zinc content of the Bacillus anthracis THE ANTHRAX TOXIN,

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RY "Zinc content of the Theorems Composing The ANTHRAX TOXIN,

RY "Zinc content of the PACILITATION, ONE OF THE INTERNALIZATION OF LF OR ET.

RY THE BY TO RECETTOR ONE OF THESE IS TOXIC BY ITSELF.

RY THE ANTHRAX TOXIN IS COMPOSED OF THREE DISTINCT PROTEINS, A PROTECTIVE ANTICEN (PA), A LETHAL FACTOR (LF) AND AN CEDERAL FACTOR (EF). NONE OF THESE IS TOXIC BY ITSELF.
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"Nucleotide sequence and analysis of the lethal factor gene (lef) from Bacillus anthracis.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1599
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EMBL; M29081; G143144; -.
EMBL; M30210; G143142; -.
PIR; JQ0032; JQ0032.
PROSITE; PSG0142; ZINC_PROTEASE; 1.
HYDROLASE; METALUPROTEASE; ZINC; TOXIN; SIGNAL; REPEAT; PLASMID.
                                                                                                                                                                                                            This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entitles requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PLASMID PXO1
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MEDLINE; 95154669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ZINC-BINDING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RSSVLPNSIIPELE-----KAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGERI 1332
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SIMILARITY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LQSALEEAEASLEHEEGNILRAQLEFNQIKAEIERKLAEKDEEMEQAKRNHLRVVDSLQT 1598
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       IVKEVEEIEEEVEKEVEKVGRTEMTLFQ-----RLAEGFNELKQDEENFVRELS----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           METALLOPROTELSE) .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SIMILARITY: SELONGS TO PEPTIDASE FAMILY M34 (ZINC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SLDAETRSRNEFERVKKKMEGDLNEMEIQLSHANRMAAEA 1638
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   THE PA-BINDING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 --KEEME-FLDEIKMEASEVEKLFGKA 1405
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REGION IS FOUND IN BOTH B. ANTHRACIS EF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   --ARSLST 1478
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Best Local S
                                 1380 ----LSKEEME-----FLDEIKMEASEV 1398
                                                                                                                                                                                                                                                                                                             1165
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                                                                                                                                                                                                                                                                                                                                                                                                                                   1050 VLACAFLIVPSADAVDALKTCACLLKGCRIELAKCIANPACAANVACLQTCNNRPDETEC 1109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1007 GRSSRPL----
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729 AGYLLDKNQSDLVTNSKKFIDIFKEEGSNL 758
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           733 EENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHD---NEYLLYQDDWY--I 787
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          788 LSSKVENSPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDFNT 847
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               162 L---VIQSSEDYVENTEKALN-----
                                                             PNIAEQYTHQDEIYEQVHSKGLYVPESRSILLHGPSKGV-ELRNDSEGFIHEFGHAVDDY 728
                                                                                                                              FNVHNRYASNIVESAYLILNEWKNNIQSD------LIKKVTNYLVDGNGRFVFTDITL 669
                                                                                                                                                                SVLPNSIIPELEKAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGE-RIIVKEV-- 1338
                                                                                                                                                                                                                                 NQPGVLYNHDNEYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDAWDGYGGAVVYTR--S 1280
                                                                                                                                                                                                                                                                             AGYLENG - - -
                                                                                                                                                                                                                                                                                                KWYITSGLNPTFDAFDCQLHEFHTEGDNKLV--GNISWRIKTLDSGFFTRSAVQKFVQDP 1222
                                                                                                                                                                                               ----IIKQSEKEYIRI-DAKVVPKSKIDTKIQE----AQLNINQEWNKALGLPKYTKLIT 617
                                                                                                                                                                                                                                                                                                                                  ------DNTKINRGIFNEFKKNFKYSISSNYMIVDINERPALDNERLKWRIQLSPDTR 543
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MAVATHCFTSPCHDRIRFFSSDDGIGRLGITRKRINGTFLLKILPPIQSAD----LRTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      QIPIEPKKDDIIHSLSQEEKELLKRIQIDSSDFLSTEEKEFLKKLQIDIRDSLSEEEKEL 389
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ---LQRDEENFLRELSKEEMDVLDGLKMEATEV----EKLFGRALPI------RKL 950
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APEAFNYMDKFNEQEINLSLEELKDQRMLSRYEKWEKIKQHYQHWSDSLSEEGRGLLKKL 329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       IKNASDSDGQDLLFTNQLKEHPTDFSVEFLEQNSNEVQEVFAKAFAYYIEPQHRDVLQLY 269
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FIKTDNTCG------PEPPLVERLEKKVEEGERTIIK--------879
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EMYKAIGG---KIYIVDGDITKHISLEALSEDKKKIKDIYGKDALLHEHYVYAKEGYEPV 161
                                                                                             -----EEIEEEVEKEVEKVGRTEMTLFQRLAEGFNELKQDEENFVRE------
                                                                                                                                                                                                                                                                                                                                                                                                      -----GADLVDST------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ----EVEEIEEEVEKVRDKEVTLFSKLFEGFKE-----------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative 117; Mismatches 254; Indels 300;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ------SAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKLVG 1049
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    723
93786 MW;
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293
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17.2%;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 132; DB
Pred. No. 2.4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    POTENTIAL.
ZINC (CATA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ZINC (CATALYTIC) (POTENTIAL)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PA-BINDING REGION (POTENTIAL).
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RESULT 15 YIO9_YEAST

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EMBL; Z47047; G763197; -. EMBL; Z38059; G557774; -. PIR; S48385; S48385. HYPOTHETICAL PROTEIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its modified and this statement is not removed. Usage by and for commercial entitles requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              STRAIN-S288C / AB972;
BARRELL B.G., BADCOCK K., BANKIER A.T., BOWMAN S., BROWN D.,
CHURCHER C.M., CONNOR R., COPSEY T., DEAR S., DEVLIN K., FRASER
GENTLES S., HAMLYN N., HORSNELL T.S., HUNT S., JAGELS K., JONES
LOUIS E., LYE G., MOULE S., MOULE T., ODELL C., PEARSON D.,
RAJANDREAM M.A., RIDES L., ROWLEY N., SKELTON J., SMITH V.,
  785 WYILSSKVENSPEDYIFVYYKGRNDAW-----
                                                                                                                                                        674 VSRKKCVPRKSCVGDFPVPDPSVLVQKFDMKDFSGKWFITRG-----LNPT----FDAFD
                                                                                                                                                                                                            807
                                                                                                                                                                                                                                                                                         748
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        432 QDEENFVR-----ELSKEEKEILNELQMEATEVEKLFGRALPIRKLR------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SUBMITTED (DEC-1994) TO EMBL/GENBANK/DDBJ DATA BANKS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SACCHAROMYCES CEREVISIAE (BAKER'S YEAST).
EUKARYOTA; FUNGI; ASCOMYCOTA; HEMIASCOMYCETES; SACCHAROMYCETALES;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                01-FEB-1995 (REL. 31, CREATED)
01-FEB-1995 (REL. 31, LAST SEQUENCE UPDATE)
01-FEB-1995 (REL. 31, LAST ANNOTATION UPDATE
HTPOTHETICAL 195.1 KD PROTEIN IN DNA43-UBI1
                                             886 VQLKDANS--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  595 STEENKANTNSVTSMEAAREKKIRELEAELSSTKVE----NSAIIQNLRKELLIYKKSQC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     379 LVERLE------KTAEEGEKLLIKEAVEIEEEVEKEVEKVRDTEMTLFORLLEGFKELQ 431
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         WALSH S.V., WHITEHEAD S.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SACCHAROMYCETACEAE; SACCHAROMYCES
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P40457;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                536 LADKLENYEGKODKTLOKVENOTIKEAKDAIIELE-NINAKMETRINILLRERDSYKLLA 594
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Local
                                                                           CQLHEFHTEENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLYQDD
                                                                                                                TTIEKL---SSEIENL---DKELRKTKFQYK-----FLDQNSDASTLEPTLRKELEQIQ
                                                                                                                                                                                                C----KDSQLKWAQ-------NTIDDTEMKMK-----SLLTELSNKE
                                                                                                                                                                                                                                   CTCLLKECRLELAKCISNPACAANVACLQTCNNRPDETECQIKCGDLFENSVVDEFNECA
                                                                                                                                                                                                                                                                             KKELQMRLKESEISHNENKMDFSSKEGQY-KAKIKELENNLERLRSDLQSKIQEIESIRS
                                                                                                                                                                                                                                                                                                                  PKDVALMVWE-----KWGQFAKTAIVAI-----FILSVASKADAVDALKT
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                                                                                                                                                                                                                                                                                                                                                                                                RRIPRYFR-KSPRICCGLDSRGLQLFSHGKHNLSPAHSINQN-VPKGNS------GCKF 573
                                                                                                                                                                                                                                                                                                                                                                                                                                     KKKTTLEDFENFKGLAKEKERMLEEAIDHL---KAELEKQKSW-----------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ---MALAPHSNF--LAN-----HETIKYYVGSKLPGHKRFSWGWEDYFGSIVVAKICSS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1.7%; Score 130; DB 17.9%; Pred. No. 8.3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 195141 MW; 5897CD94 CRC32;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LAST SEQUENCE UPDATE)
LAST ANNOTATION UPDATE)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   188;
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                                         ------QIQAYEEIISSNENALI-----
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---DGYGGSVLYTRSAVLPESIIPELQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 1; Length 1679;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   396;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels 376;
                                                                                                                                                                                                                                                                                                                                                                                                                                         691
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Qy Db	Qу	Qу Дъ	Qy	Оy	Оy	Qу	Оу	ОУ	Db Qy	Qy Db	Db
1376 1444	1318 1384	1258 1350	1212 1291	1152 1258	1099 1200	1039 1153	980 1112	932 1070	889 1010	836 960	911
FVRELSKEEMEFLDEIKMEASE-VEKLEGK 1404 : : : :: :: TLRRIKEAEENLKKRIRLPSEERIQKIISK 1473	LVERIEKTVE-EGERIIVKEVEEIEEEVEKEVEKVGRTEMTLFQRLAEGFNE-LKODEEN 1375	FVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELEKAAKSIGRDFSTFIRTDNTCGPEPA 1317	RSAVQKFVQDPNQPGVLYNHDNEYLHYQDDWYI-LSSKIENKPEDYI 1257 : :	VLVQNFNISDENGKWYITSGLNPTFDAFDCQLHEFHTEGDNKLVGNISWRIKTLDSGFET 1211 :	TCNNRPDETECQIKCGDLFENSVVDEFNECAVSRKKCVPRKSDLGEFPAPDPS 1151	LTAPLILKLYGYLACAFLIYPSADAYDALKTCACLIKGCRIELAKCIANPACAANVACIQ 1098 : : :	ITRKRINGTELKILPPIQSADLR-TTGGRSSRPLSAFRSGESKGIFDIVPLPSKNELKE 1038	M-EATEVEKLFGRALPIRKLMAVATHCFTSPCHDRIRFFSSDDGIGRLG 979 :	KVRDKEVT-LFSKLFBGFKELQRDEENFLRELSKEEMDVLDGLK 931 : :	TAAQKVGRDENTFIKTDNTCGPEPPLVERLEKKVEEGERTIIKEVEEIEEEVE 888	::: : : : : : :: : : : :: : : : : : :

Search completed: October 14, 1999, 03:58:19 Job time: 2412 sec

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7495
1 MALSLHTVFLCKEEALNLYA.....MEASEVEKLFGKALPIRKVR 1412
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sp_organelle:*
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sp_fungi:*
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                                                                                                                       sp_mhc:*
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

29	28	27	26	25	24	23	22	21	20	19	18	17	. 16	15	14	13	12	11	10	9	œ	7	6	₅	4	ω	2	_	No.	Result	
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Q85431 rice stripe	018392 drosophila	059462 pyrococcus	042263 xenopus lae	Q04834 xenopus lae	Q48673 lactococcus	042352 cyprinus ca	Q28641 oryctolagus	Q49546 mycoplasma	028714 archaeoglob	066878 aguifex aeo	096133 plasmodium	P91121 caenorhabdi	O43254 homo sapien	Q90339 cyprinus ca	062175 caenorhabdi

ALIGNMENTS

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774 HDNEYLLYQDDWYILSSKVENSPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLPESIIPE 833	714 RGLNPTEDAFDCQLHEFHTEENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDDKYPGILYN 773 	654 QIKCGDLFEN://VDEFNECAVSRKKCVPRKSDVGDFPVPDPSVLVQKFDMKDFSGKWFIT 713 	594 VAIFILSVASKADAVDALKTCTCLLKECRLELAKCISNPACAANVACLQTCNNRPDETEC 653 	534 RICCGLDSRGLCLFSHGKHNLSPAHSINQNVPKGNSGCKFPKDVALMVWEKWGQFAKTAI 593 	474 MALAPHSNFLANHETIKYYYGSKLPGHKRFSWGWEDYFGSIVVAKICSSRRIPRYFRKSP 533 : :	Query Match 34.1%; Score 2557; DB 10; Length 478; Best Local Similarity 100.0%; Pred. No. 2.5e-139; Matches 477; Conservative 0; Mismatches 0; Indels 0; Gaps	Core eudicots; Asteridae; euasterids I; Solanales; Solanaceae; Nicotiana. (1) Nicotiana. (1) SEQUENCE FROM N.E. STRAIN=XANTHI; ItSSUE=LEAF; BUGOS R.C., YAMA, YOTO H.Y.; SUBmitted (AUG-1995) to the EMBL/GenBank/DDBJ databases. SUBmitted (AUG-1995) to the EMBL/GenBank/DDBJ databases. EMBL; U34817; AAC50031.1; EMBLE; U34817; AAC50031.1; EMBLE; U34817; AAC50031.1; TRANSIT 1 134 POTENTIAL. TRANSIT 1 134 POTENTIAL. CHAIN 1 135 478 POTENTIAL. SEDIENCE 478 A. 54561 MW. GRB72D42 CRC32.	NULT 1 1593 PRELIMINARY; PRT; 478 AA. Q40593; Q1-NOV-1996 (TrimeLrel. 01, Created) Q1-NOV-1996 (TrimeLrel. 01, Last sequence update) Q1-JAN-1999 (TremeLrel. 09, Last annotation update) VIOLAXANTHIN DE-EPOXIDASE PRECURSOR. TVDE1. Nicotiana tabacum (Common tobacco). Eukaryota; Viridiplantae; Steptophyta; Embryophyta; Tracheophyta; euphyllophyta; Spermatophyta; Magnoliophyta; eudicotyledons;

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"Molecular cloning of violaxanthin de-epoxidase from romaine and expression in Escherichia coli.";

Proc. Natl. Acad. Sci. U.S.A. 93:6320-6325(1996).

EMBL; U31462; AAC49373.1;

MENDEL; 8691; LACSa; Vdel; 1.
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01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
01-LAN-1999 (TrEMBLrel. 09, Last annotation update)
VIOLAXANTHIN DE-EPOXIDASE PRECURSOR.
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SHINN P., BUEHLER E., DEWAR K., F. CONWAY A., CONWAY A., KURTZ D., O. VYSOTSKAIA V., YU G., DAVIS R.W.,
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EMBL; AC003981; AAC140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Submitted (APR-1998) to the EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              951 MAVATHCFTSPCHDRIRFFSSDDGIGRLGITRKRINGTFLLKILPPIQSADLRTTGGRSS 1010
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                                                                                                                NKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLFNSIIPELEKAAKSIGRDFSTFIRTDN
                                                                                                                                                                                                         DNKLVGNISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLYNHDNEYLHYQDDWYILSSKIE
                                                                                                                                                                                                                                                                                               SRKKCVPRKSDLGEFPAPDPSVLVQNFNISDFNGKWYITSGLNPTFDAFDCQLHEFHTEG
TCGPEPALVERIEKTVEEGERIIVKEVEEIEEEVEKEVEKVGRTEMTLFQRLAEGFNELK
                                          TCGPEPALVERIEKTVEEGERIIVKEVEEIEEEVEKEVEKVGRTEMTLFQRLAEGFNELK
                                                                                        NKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELEKAAKSIGRDFSTFIRTDN
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(TrEMBLrel. 01, Last sequence update)
(TrEMBLrel. 09, Last annotation updat
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Spermatophyta; Magnoliophyta; eudicotyledons;
Rosidae; eurosids II; Brassicales; Brassicaceae;
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Pred. No. 4.5e-132;
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VIOLAXANTHIN DE-EPOXIDASE; 37FB33BA CRC32;
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OJI O., SHEN Y.K.,
V., FEDERSPIEL N.A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Mismatches
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Best Local Similarity
Matches 255; Conserv
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STRAIN=WM;
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MEDLINE; 95021522.

KEEN J., SINHA K., BROWN K., HOLDER A.;
KEEN J., SINHA K., BROWN K., HOLDER A.;
TA gene coding for a high-molecular mass rhoptry protein
Plasmodium yoelii.";
Mol. Biochem. Parasitol. 65:171-177(1994).
EMBL; L27838; AAA21304.1; -.
EMBL; L27838; AAA21304.1; -.
EMBL; L27838; AAA21304.1; -.
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Q26223;
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01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
01-NOV-1998 (TrEMBLrel. 08, Last annotation update)
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Eukaryota; Alveolata; Apicomplexa; Haemosporida; Plasmodium.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           356 AKSVGRDFNNFITTDNSCGPEPPLVERLEKTAEEGEKL------LIKEAVEI 401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      304 YILSSQIENKPDDYIFVYYRGRNDAWDGYGGSVIYTRS-----PTLPESIIPNLQ--KA 355
                                                                                                                                                                                                                                                                                                                                                                                              550
                                                                                                                                                                                                                                                                                                                                                                                                                                 255 YDEI--SKELNKMLEDFKNK----EKELSNKISDYDKKREQL-SEYKSKMLEIRNHYNSQ 307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    494 GSKLPGHKRESWGWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLESH---- 550
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                                                                                                                                                                                                                                   638 VACLQTCNNRP----DETECOIKCGDLFEN----SVVDEFNECAVSRKKCVPRKSD-----
                                                                                                                                                                                                                                                                                                              578 ALMVWEKWGQFAKTAIVAIFILSVASKADAVDALKTCTCLLKECRLELAKCISNPACAAN 637
                                                                                                                                                                                                                                                                                                                                                     308 TNVDNTKEEEAKQNYDKSNEHMTTIPTNEDEISKIISEVKTMKDEILSKVNTYIDFNKKY 367
  791
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                                                                                                                                                                                              --CEQSFNDNKSLINETKNSIE--KEYQNINTLKKVDEYIKVCKSTKESITKFSSKQTIL 452
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EDPIDDIE-DKTKLENLRSKIDNVYDKIQKMEIETVKSHLNNIETNNKLPNTILEIKKYI 254
                                        IKYFSDLKANLGINEENMLYNQFTEK--EKTFNDIKEKNI---HINEEI-----S 552
                                                                                                                  KDMLNQNIKTVKETNSIDKS-YIEKFE-QILTGK----QTKLENKFTEFSLNNHEANNNEL 507
                                                                                                                                                                                                                                                                           KETVNSEHSQFTE-----LTDKIKAEVSDK------ELKK-----
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  KVENSPEDYIF --
                                                                           ----NKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLYQDDWYILSS 790
                                                                                                                                                         -----VGDFPVPDPSVLVQKFDMKDFSGKWFITRGLNPTFDAFDCQLHEFHTEE-
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	01-NOV-1996 (TIEMBLEEL 01, CHEACH) 01-NOV-1996 (TIEMBLEEL 08, Last sequence update) 01-NOV-1998 (TIEMBLEEL 08, Last annotation update) RHOPTRY PROTEIN (FRAGMENT). Plasmodium bergingi yoelii. Plasmodium bergingi yoelii. Eukaryota; Alveo:ata; Apicomplexa; Haemosporida; Plasmodium.	
	SULT 5 2216 Q26216 PRELIMINARY; PRT; Q26216; PRELIMINARY; PRT;	AC RE
	1233 KPTIQHI 1239	Db
•	1382 KEEMEFL 138?	Qy
1232	1332 IIVKEVEEIEER:VEKEVEKUGRTEMTLFQRLAEGFNELKQDEENEVRELS	Оy
7	1119 IKINEIRTKSDLCLKETNDLEKQISNLSIDTQETKLTENGKQLKTLEELLESLKKQK-	Дb
1331	EKAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGER	Qγ
1285 1118	1230 NHDNEYLHYQDDWYILSSKIENKPEDYIFYYYRGRNDAWDGYGGAVVYTRSSVLP	Qy Db
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1048	998 KSHKDKSNGYKTEADQNKKAIQKNKELFEQYKEEVTVLLNKYYAVELKNK998	· · · · · · · · · · · · · · · · · · ·
17	LGEFPAPDPSVLVQNFNISDFNGKWYITSGLNPT	Qy
	NIKEL	Db Oy
_ (900 VIKKIEGDES) Db
1099	43 LLLKLVGVLAGAFLIVPSADAVDALKTGACLLKGCRIELAKCIANPACAANVACLQT :: : : : :	y 0y
899	1016 FRSGFSKGIFDIVPLPSKNELKELTAP: :-	Qy Db
4 2	DKSKNHKENISDIYDKSSKIIQDFSRESDINDIKNKLQKNVSE	Db
1015	HDRIRFFSSDDGIGRLGITRKRINGTFLLKILPPIQSADLRTTGGRSSRPLSA	Qy
791	902 FEGEKELQRDEENFLRELSKEEMDVLDGLKMEATEVEKLEGRALPIRKLMAVAT 9	Qу
· ω	IEKDNTSLEKVKDINLSYGQNL	Dβ
0	LEKKVEEGERTIIKEVEEIEEEVEKVRDKEVTLFSKL	Qy
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1143 KNKELFEKYEQEV----TVLLNKYYAVELK-----NKFDKTKN------YSEQI 1181
                                                                                                                                                                 1083 -----NVSLNFNNIEMADTKSQYIL------
                                                                                                                                                                                                                                           1049 VSECIKNITNLKTYIVNEKNN-----INTYFKNA--EEYNQ------
                                                                                                                      746 RTPDGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLYQDDWYILSSKVENSPEDYIFVYYK
                                      806 GRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDENTFIKTDNTCGPEPPLVERL 865
                                                                                                                                                                                                   686 VGDFPVPDPSVLVQKFDMKDFSGKWFITRGLNPTFDAFDCQLHEFHTEENKLVGNLSWRI 745
                                                                                                                                                                                                                                                                                 632 -PACAANVACLQTC-----NNRPDETECQIKCGDLFENSVVDEFNECAVSRKKCVPRKSD 685
                                                                                                                                                                                                                                                                                                                       999 --VKEYTDEIEKN------NKKINAELSNSEKIITQLKENSSLKECQSKIKSTIDDNY 1048
                                                                                                                                                                                                                                                                                                                                                                579 LMVWEKWGQFAKTAIVAIFILSVASKADAVDALKTCTCL----LKECRLELAKCISN-- 632
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          141 IELAKCIANPSCAANVACLQTCNNR----PDETECQIKC------GDLFENSVVD 185
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                                                                                                                                                                                                                                                                                                                                                                                                                                            ICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGKHNLSPAHSINQNVPKGNSGCKFPKDVA 578
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MKALNISHDDYKIYHTTSKNH-EEKISDIRKNSLKIIQDFSEESYINDIKKELEKNVLES 966
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LRMALAPHSNFLANHETIKYYVGSKLPGHKRFS-----WGWEDYFGSI-----VVAK 518
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GKSLGNLFLQQIDEEKKKAEHTIKAMEAYIDDLDNIKKKSQEIEKEMNINMDIKMDIHKE 907
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -----FVRELSKEEKEI------RK 471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               KTMFNEDPKEIEKKIENIVEKI-DKKKNIYKEIDKLLNEISKIENDKTSLEKLKNINLSY 847
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Q-----FNECAVSRKKCV----PRKSDVGEFPVPDRNAVVQNFNMKDFSGKWY
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2401 AA; 281980 MW; 39A40760 CRC32;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2.2%; Score 167.5; DB 5;
16.7%; Pred. No. 0.26;
Vative 274; Mismatches 498;
                                                                                --LKEHKKKSNVYKDE-----AGKNTQE----IK 1142
                                                                                                                                                               ---NIKKNNGTNNTDYNI 1117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels 525;
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                                                                                                                                                                          Matches
                                                                                                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    049525; PRELIMINARY; PRT; 1365 AA. 049525; 01-NOV-1996 (TrEMBLrel. 01, Created) 01-NOV-1996 (TrEMBLrel. 01, Last sequence update) 01-NOV-1998 (TrEMBLrel. 08, Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                             "Selection of Mycoplasma hominis PG21 deletion mutants by cultivation in the presence of monoclonal antibody 552."; Infect. Immun. 63:3336-3347(1995).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mycoplasma hominis.
Bacteria; Firmicutes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1612 LNLI--FENRLLHDKVQATNELK----DTLSDLKNKKEQILNKVKLLLHKSNELNKL 1662
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                                                                                                                                                                                                                                                                                                                                                                SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MEDLINE; 95369882.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STRAIN-MH56;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1569 ----DTLTFI------PSP-----EKTSETYTKISDSYNTLLDILKRSQELQKKEQQA 1611
                                                                    272 TRSAVQTFVQDPDLPGALYNHDNEFLHYQDDWYILSSQIENKPDDYIFVYYRGRNDAWDG 331
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Mycoplasmataceae; Mycoplasma
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            282 TRNQIQEFINT----
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            866 EKKVEEGERTIIKEVEEIEEEVEKVRDKEVTLFSKLFEGFKELQRDEENFLRELSKEEMD 925
                                                                                                                                                                      Local Similarity
les 209; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     YEAENIFINIPKLAN------SLNIQIKSSSGIDLFKNINI---AILPYLDSQKK 1568
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  VDEFNECAVSRKKCVPRKSDLGEFPAPDPSVLVQNF--NISDFNGKW----YITSGLNPTF 1176
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         IKNIESNVNQHKKNYEIGIVEKINEIAKA-----NKDQIESTQKLI------IPTIKNL 1362
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                                                                                                                                                                                                                                                                                                                                                                1365 AA;
                                                                                                                                                          Conservative 187; Mismatches 420; Indels 430;
                                                                                                                                                                                              2.1%; Score 156; DB
16.8%; Pred. No. 0.57;
----NKNNP--NYSE----LISQLTSKRD-----SKNSVTDS 319
                                                                                                                                                                                                                                                                                                                                                    154982 MW; 23BE4182 CRC32;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Bacillus/Clostridium group; Mollicutes;
                                                                                                                                                                                                                           DB 2;
                                                                                                                                                                                                                                       Length 1365;
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    1301 DESTEIR-----TDNTCGPEPALVERIEKTVEEGERIIVKE-----VEEIEEEVEKEV 1348
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             HCFTSPCHDRIRFFSSDDGIGRLGITRKRINGTFLLKILPPIQSAD-----LRTTGGRS 1009
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                                                                                                                                    GIESLQKW-QDLMDDSVLSVDDS----LKDDFNKALRVLVGDYTKNPPVSSWFINKRNRS
                                                                                                                                                                                                                        ESTIKKVIVNIQAHIRNNLN-------SQYRLEAD-KLIAN------MKRGYGDKV 1009
                                                                                                                                                                                                                                                                  NFNISD--FNGKWYITSGLNPTFDAFDCQLHEFHTEGDNKLVGNISWRIKTLDSGFFTR- 1213
                                                                                                                                                                                                                                                                                                              SNIGYRLFKLAQAEQFNNSDVDKLKNAWEEKQTLLSKKQKLGNQSTKDYLTQLSTEMSTQ 967
                                                                                                                                                                                                                                                                                                                                                           NRPDETECQIKCGDLFENSVVDEFNECAVSRKKCVPRKSDLGEFPAPD------PSVLVQ 1155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SSIDNELRPL --- KNDLQSKIEEFGPIRNTNFSWISSKLETTKNKLAEELT -----
                                                IENYQNLRNLILVRENEILLDKAKDLDKRAEKTIKFVDENINSLDQRAKRLKQEILNAKN 1124
                                                                                                                                                                              --SAVQKFVQDPNQPGVLYNHDNEYLHYQDDW-----YILSSKIENKPEDYIFVYYRGRN 1265
                                                                                                                                                                                                                                                                                                                                                                                                       ------KADAIKNNPSSSKQALKDSSQQVQKLGNELLKTITE-----EFGKVETKN 907
                                                                                          ------VQKADQAIKSNNTASMQSAKSSLDAKVAEITKKLETENKDKEA 588
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01-NOV-1996 (TrENBLrel. 01, Created)
01-NOV-1998 (TrENBLrel. 08, Last sequence update)
01-MAY-1999 (TrENBLrel. 10, Last annotation updat
MYOSIN HEAVY CHAIN.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Myosin.
SEQUENCE
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Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Actinopterygii;
Neopterygii; Teleostei; Euteleostei; Ostariophysi; Cypriniformes;
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EMBL; D89990: BAAN2067.1: -.
EMBL; D50474: BAA09067.1; -.
PFAM; PF00612; IQ; 1.
PFAM; PF00063; myosin_head; 1.
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IMAI J., HIRAYAMF Y., KIKUCHI K., KAKINUMA M., WATABE S., "CDNA cloning of myosin heavy chain isoforms from carp fa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           HIRAYAMA Y., WATABE S.;
"Structural differences in the crossbridge head of
temperature-associated myosin subfragment-1 isoforms from carp fast
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Cyprinoidea; Cyprinidae; Cyprininae; Cyprinus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          muscle and their gene expression associated with temperature
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TISSUE-FAST SKELETAL MUSCLE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Eur. J. Biochem. 246:380-387(1997).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              skeletal muscle.
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                                                                                                                                                                                                                                                                                                                                                                       606 VVQLYQKSALKVLALLYVAVPEAEAAGKKGGKKKGGS----FQTVSAVFRENLGKLMTNL 661
894 SENLSDAEERCEGLIKSKIQLEGKLKETTERLEDEEEINAELTAKKRKLEDECSELKKDI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Local
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                                  RPDETECQIKCGDLFENSV-----
                                                                         PLLKTAESE----KEMASMKENFEKMKEDLTKALAKKKELEEKMVSLVQEKNDLLLQVTSE 893
                                                                                                          QFAKTAIVAITILSVASKADAVDALKTCTCLLKECRLELAKCISNPACAANVACLQTCNN 646
                                                                                                                                             HLVIMTQALARGYVMR--KEFVKMMERREAIYSIQYNIRSFMNVKHWP---WMKVYFKIK 836
                                                                                                                                                                                  RYFRKSPRICCGLDSRGLQLFSHGKHNLSPAHSINQNVPKGNSGCKFPKDVALMVWEKWG
                                                                                                                                                                                                                       KVLNASVIPEG()FIDNKKATEKLLGSIDVDHNQYKFGHTKVFFKAGLLGTLEEMRDEKLS
                                                                                                                                                                                                                                                          -KLRMALAPHSNFLANHETIKYYVGSKLPGHKRFSWGWEDYF---GSIVVAKICSSRRIP 526
                                                                                                                                                                                                                                                                                               RSTHPHFVRCLLPNESKTPGLMENFLVIHQLRCNGVVEGIRICTKGFPSRIHYGDFKQRY 721
                                                                                                                                                                                                                                                                                                                                  QQDEENFVRELSKEEKE------ILNELQME-ATEVEKLFGRALPIR-------
                                                                                                                                                                                                                                                                                                                                                                                                                                               203;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                2.1%; Score 156; DB 17.0%; Pred. No. 0.9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                 181;
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                                      -----VDEFNECAVSRKK-----CVPRKSDV
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SEQUENCE FROM N.A.
STRAIN=VC-16 / DSM 4304 / ATCC 49558;
                                                                                                                                                    01-JAN-1998 (TrEMBLrel. 05, 01-JAN-1998 (TrEMBLrel. 05, 01-NOV-1998 (TrEMBLrel. 08,
                                                                            Archaeoglobus fulgidus.
Archaea; Euryarchaeota;
                                                                                                                                                                                                                                                                                                                 1562 LELNQVKSEIDRKLAEKDEEMEQIKRNSQRVLDSMQSTLDSEVRSRNDALRVKK 1615
                                                                                                                                                                                                                                                                                                                                                       1356 MTLFQ------RLAEGFNELKQDEENFVRELSKEEMEFLDEIKM--EASEVEK 1400
                                                             Archaeoglobus
                                                                                                                                    PURINE NTPASE,
                                                                                                                                                                                                               029230;
                                                                                                                                                                                                                                    029230
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1420 LQSEVEDLMIDGERANALAANLDKKQRNFD------KVLADWKQK---YEESQAEL 1466
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1086
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                807
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                                                                                                                                                                                                                                                                                                                                                                                            KNLQQEISDLSEQLGETGKSIHEIEKAKKTVESEKAEIQTALEEAEGTLEHEESKILRVQ
                                                                                                                                                                                                                                                                                                                                                                                                                                KSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGERIIVKEVEEIEEEVEKEVEKVGRTE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       H-YQDDWYILSSKIENKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELEKAA 1295
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TDAIQRTEELEESKKKLAQRLQDAEE------SIEAVNSK---CASLEKTKQR 1419
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               QLSEIKAKSDENSRQLNDMN-------AQRARLQTENGEFSRQLEEKEALVSQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EAAQKEARSLSTELFKMKNSY-----EEALDH------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FDCQLHEFHTEGD--NKLVGNISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLYNHDNEYL 1236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NSVVDEFNECAVSRKKCVPRKSDLGEFPAPDPSVLVQNFNISDFNGKWYITSGLNPTFDA 1178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -----EVKAKNALAHAVQSARHDCDLLREQYEEEQEAKAELQRGMSKANSEVAQWRAKYE 1375
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LSAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKLVGVLACAFLIVPSADAVDALKTCAC 1072
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LLKGCRIELAKCIANPACAANVAC--LQTCNNRPDETECQIKCG-------DLFE 1118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LTRGKQAFTQQIEDL----KRHVEE-----
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FKELQRDEENFLRELSKEEMDVLDGLKMEATEVEKLFGRALPIRKLMAVATHCFTSPCHD
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TPDGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLYQDDWYILSSKVENSPEDYIFVYYKG 806
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GDFPVPDPSVLVQKFDMKDFSGKWFITRGLNPTFDAFDCQLHEFHTBENKLVGNLSWRIR 746
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   -----DDLEGSLEQEKKLRMDLERVKRKLEGDLKLAQESIMDLENEKQQSDEKIKKKDFE 1085
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                                                                                                                                                                                                                                 PRELIMINARY;
                                                                                                                                      PUTATIVE
                                                                       Archaeoglobales; Archaeoglobaceae;
                                                                                                                                                  Last sequence update)
Last annotation update
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                                      1406 LPIR 1409
                                                                                                             1349 EKVGRTEMTLFORLAEGFN---ELKQDEENFVRELSKEEMEFLDEIKMEASEVEKLFGKA 1405
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KLENK H.-P., CLAYTON R.A., TOMB J.-F., WHITE O., NEISON K.E., KETCHUM K.A., DODSON R.J., GWINN M., HICKEY E.K., PETERSON J.D., RICHARDSON D.L., KERLAVAGE A.R., GRAHAM D.E., KYRPIDES N.C., FLEISCHMANN R.D., QUACKENBUSH J., LEE N.H., SUTTON G.G., GILL S., KIRNESS E.F., DOUGHERTY B.A., MCKENNEY K., ADAMS M.D., LOFTUS B., PETERSON S., REICH C.I., MCNEIL L.K., BADER J.H., GLODEK A., ZHOU OVERBEEK R., GOCAYME J.D., WEIDMAN J.F., MCDONALD L., UTTERBACK T., COTTON M.D., SPRIGGS T., ARTIACH P., KAINE B.P., SYKES S.M., SADOW P.W., D'ANDREA K.P., BOWMAN C., FUJII C., GARLAND S.A., MASON T.M., OLSEN G.J., FRASER C.M., SMITH H.O., WOESE C.R.,
                                                                                                                                                                                          1289 PELEKAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGERIIVKEVEEIEEEVEKEV 1348
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1071 ACLLKGCRIELAKCIANPACAANVACLQTCNNRPDETECQIKCGDLFENSVVDEFNECAV 1130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1026 DIVPLPSKNELKELTAPL---------LLKLVGVLACAFLIVPSADAVDALKTC 1070
642 EEIR 645
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Hypothetical protein SEQUENCE 886 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EMBL; AE001032; AAB90211.1; -. TIGR; AF1032; -. PFAM; PF00470; RecF; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  sulphate-reducing archaeon Archaeoglobus fulgidus."; Nature 390:364-370(1997).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           911 DEENFLRELSKEEMDV----LDGLKMEATEVEKLFGRALPIRKLMAVATHCFTSPCHDRIR 967
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              198
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         854 TCGPEPPLVERLEKKVEEGERTI----IKEVEEIEEEVEKVRDKEVTLFSKLFEGFKELQR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              152
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     797 EDYIFVYYKGRNDAWDGYGGSV--LYTRSAVLPESIIPELQTAAQKVGRDFNTFIKTD-N 853
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          The complete genome sequence of the hyperthermophilic,
                                                                                                                                                            KELKSSLREI
                                                                                                                                                                                                                                  SSHDAE-----KLSAESEE----YRKVKERLDGLRGQQKILLSSA---SRI
                                                                                                                                                                                                                                                                        --HDNEYLHYQQDWYILSSKIENKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSII 1288
                                                                                                                                                                                                                                                                                                            IMAEYTREMKRIAEELAKADEIEKKLKERLEKVEKALEKQETVLKYRQMVDELKALENEL
                                                                                                                                                                                                                                                                                                                                                                                                     KLKKLIAKKSSLKTRGAQLKKAVEE---
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         D-----NSKLEEITKRIEELERELERFEKSHRLLE------TLKPKMDRMQGIK-- 373
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FFSSDDGIGRLGITRKRINGTFLLKILPPIQSA--DLRTTGGRSSRPLSAFRSGFSKGIF 1025
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EDY-----ENAWKNLGAVIRMLEREKERLKEFLSQEEQIKRQKEEK-----KAEIE 197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       886 AA;
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                                                                       -QSLRPFYNKWLELKDAESRLESELKRRE-KLEDEISEAIAKLEEANGKA
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                                                                                                                                                      ----EEAL-KNVESERGELHRKIREEGFESLEELEREV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 155.5; DE
Pred. No. 0.34;
85; Mismatches 2
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RESULT
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Q25662:
01-NOV-1996 (TrEMBLrel. 01, Created)
01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
01-AUG-1998 (TrEMBLrel. 07, Last annotation update)
REPEAT ORGANELLAR PROTEIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            WERNER E.B., TAYLOR W.R., HOLDER A.A.;
WERNER E.B., TAYLOR W.R., HOLDER A.A.;
Submitted (DEC-1995) to the EMBL/GenBank/DDBJ databases
EMBL; U43145; AAC63403.1; -.
SEQUENCE 1939 AA; 229001 MW; 5FC4E4C2 CRC32;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Plasmodium chabaudi.
Eukaryota; Alveolata; Apicomplexa; Haemosporida; Plasmodium.
                                    1013 LSAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKLVGVLACAFLIVPSADAVDALKTCAC 1072
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          548 SHGKHNLSPAHSINQNVPKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADA 607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   488 TIKYYVGSKLPGHKRESWGWEDYEGSIVVAKICSSRRIPRYERKSPRICCGLDSRGLQLF 547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              437 FVRE-----LSKEEKEILNELQME----ATEVEKLFGRALPIRKLRMALAPHSNFLANHE 487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         380 VERLEKTAEEGEKLLIKEAVEIEEEVEKEVEKVRDTEMTLFQRLLEGFKELQQD----EEN 436
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                                                                                                                                                                                                                                                                                                                                                                                      322
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        668 EENECAVSRKKCVPRKSDVGDEPVPDPSVLVQKEDMKDESGKWEIIRGLNPTEDAEDCQL 727
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             608 VDALKTCTCLLKECRLELAKCISNPACAANVACLQTCNNRPDETECQIKCGDLFENSVVD 667
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           152 KINNKEIITLKREEK--LNDIESEYIEKNKEKEKL---NYEVTNIKMSL------- 196
                                                                                                                                                     450
                                                                                                                                                                                          897
                                                                                                                                                                                                                                                                                                                                            787 ILSSKVENSPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDFN 846
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     243 ------SFEEKRKM 264
                                                                                                                                                                                                                                414 LEIE----
                                                                                                                                                                                                                                                                                                         366 ----KINNMKEKLSSI-----ND--KGIDNTVLHSEEEKI-NKLLKEKETELNEIHKKYN 413
                                                                                                             953 VATHCFTSPCHDRIRFFSSDDGIGRLGITRKRINGTFLLKILPPIQSADLRTTGGRSSRP 1012
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      95 VKEYEVKIEELEKEL---KLEKEKQINKEYEKELNEKSEFIKROMELLKEKELNINLKEN 151
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              KLTCEVQEKKDNLEKIN-----KKVIEKENNLRELKEFMKEKNEIIESLDG-----
                                                                                                                                                                                                                                                                                                                                                                                                                       HEFHTEENKLVGNLS-WRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLYQDDWY 786
                                                                                                                                                                                                                                                                                                                                                                                                                                                               IEMLD------SKLIEKEENFAN-----
                                                                            ------NDKISSLNSE-----VN-----ILNKDKQTLG-----
                                                                                                                                                                                                                                                                 TFIKTDNTCGPEPPLVERLEKKVEEGERTIIKEVEEIEEEVEKVR------DKEVT 896
                                                                                                                                                                                                                                                                                                                                                                                      NTLKSDLSKNACQMEVYKLEIKD---LSQSLVEKERE-----IFEIKNEY----DD-- 366
                                                                                                                                                   LLEKKTEDAKEGHKNELNELNNQLSKLNKEK----DNIKNENTEL--------
                                                                                                                                                                                        LFSKLFEGFKELQRDE----ENFLRELSKEEMDVLDGLKMEATEVEKLFGRALPIRKLMA 952
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PRELIMINARY;
    -NDIKTLN--
                                                                                                                                                                                                                                  ----TIKNELNEKEEELEKNKKAHTVEVTNLTKEIK 449
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1939 AA.
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    -DLINNLKN---
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      528
                                                                                                                                                            491
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	612 KTCTCLACAAN 637	Qy	
	EKESERNQ-CNFKPQMDLEVKEISLDSYNAQLVQLEAMLRNKELKLQ	dd	
	VAIFILSVASKADAVD	Qy	
	SEAGGLKQEINTLKEEQNKMQKEVNDLLQENEQLMKVMKTKHECQNLESEPI	Db	
	SPRICCGLDSRGLQLFSHGK 551	Qy	
	65 NRKNELEQLKEAFAKEHQEFLTKLAFAEERNQNL	Db .5	
	450NELQMEATEN	0	
	: : : 05 EREKSISELSDQYKQEKLII	Db ?	
	433 DEENFVRELSKEEKEIL 450	0v	
	379 LVERLEKTAEEGIKLLIKEAVEIEEEVEKEVE-KVRDTEMTLFQRLLEGFKELQQ 432	Qy Db	
60;	2.0%; Score 147; DB 4; Length 3113; st Local Similarity 18.4%; Pred. No. 5.6; tches 240; Conservative 188; Mismatches 443; Indels 434; Gaps	Qи Ве Ма	
	EMBL; U3U8/Z; AA:82935.1; SEQUENCE 3113 AA; 357281 MW; 605779C3 CRC32;	SQ	
	is specifically involved in mitotic-phase progression."; specifically involved in mitotic-phase progression."; cell. Biol. 15:5017-5029(1995).	RT	
	CHANG K.H., LIU C.Y., CHEN C.F., SHAN .L., LEE W.H.; a novel 350-kilodalton nuclear phospho	RA	
	CE FROM N.A. E; 95379843.	RX RX	
	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.	2006	
)6 (Trembliel. 01, Last se)8 (Trembliel. 08, Last an)9 (Trembliel. MITOSIN.	SEDI	
	46 Q13246 PRELIMINARY; PRI Q13246; O1-NOV-1996 (TIEMBLIE), O1, Creat	Q132 ID AC	
	ULT 10	S	
	746 LGEGHKEVVLRLGEOHKEETIILEEKHKDVVTKLGEOHKENIIKLEEEHKDVVTKLG 80	Db &	
	1351 VGRTEMTLEGRIAEGENELKODEENEVRELSKEEMEELDEIKMEASEVEKLEG 1403	2	
	1294 AAKSIGRDEST FIT-RIDNIGGEBEALVEKLEKTVEBEERILVARVEELEBEARARD FAR 1330 1294 AAKSIGRDEST FIT-RIDNIGGEBEALVEKLEKTVEBEERILVARVEELEBEARARD FAR 1330 1294 AAKSIGRDEST FIT-RIDNIGGEBEALVERLEGERILVARVEELEBEART FAR 1330 1294 AAKSIGRDEST FIT RIDNIGGEBEALVERLEGERIA 1330 1294 1294 1294 1294 1294 1294 1294 1294	Db	
	3 GLIKQIDELNIQKLKTEEKYLQLYNDNMHMEKSICINIUMEKSEN 00/	DЬ	
	34 EYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELEK 12 : 1 1 1 1 1 1 1 1 1 1	Qу	
	KINLFNKNFEEKKNI	Db	
	TEGDNKLVGNISWRIKTLDSGFFTRSAVQKF	Qy	
	559 EIEKKYKNEIFMLEEKLKEKENYADLNDEISILRNSIYVKEKEFI 604	DЪ	
	KKCVPRK SDLGEFPAI	Qy	
	528	Db	
	NRPDETECQIKCGDLFENSV	Qy	

1343

1400

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1364 EGFNELKQDEENFVRE-----LSKEEMEFLDEIK-MEASEVEK 1400
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1288 LQCSLQTTMNKLNELEKICEILQAEKYE--LVTELND---SRSECITATRKMAEEVGKLL 1342
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      874 RTIIKEVEEIEEEVEK---VRDKEVTLFSKLFEG-----FKELQRDEENFLRELSKE 922
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   638 VAC-LOTCNNRPDETE--CQIKCGDLFENSVVDEFNECAVSRKKCV--PRK--SDVGDF- 690
                                                                                                                                                                                                 ----QLNKEKELLVKESESLQARLSESDYEKLNVSKALEAALVEK 2099
                                                                                                                                                                                                                                                                                                 HCIQVAEAEVKEKTELLQTLSSDVSELLKDKTHLQEKLQSLEKDSQALSLTKCELENQIA 2058
                                                                                                                                                                                                                                                                                                                                                 RTDNTCGPEPALVERIEKTVEEGERIIVKEVEEIEEE----VEKEVEKVGRTEMTLFQRLA 1363
                                                                                                                                                                                                                                                                                                                                                                                                  QKVIVCLEEELSVVTSERNQL---RGELDTMSKKTTALDQLSEKMKEKTQELESHQSECL 1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DSWKERFLD-----VENELSRIRSEKASIEHEALYLEADLEVVQTEKLCLEKDNENK 1941
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLYNHDNEYLH-----YQDDWYILSSKIENK 1252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             KLEYFSCDHQELLQRVETSE-----GLNS-----DLEMHADKSSREDIGDNVAKVN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           IANPACAANVACLQTCNNRPDETECQIKCGDLFENSVVDEFNECAVSRKKCVPRKSDLG- 1144
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           --EFPAPDPSVLVQNFNISDENGKWYITSGLNPTFDAFDCQLHEFHTE----GDNKLVGN 1197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ------NELKELTAPLLKLVGVLACAFLIVPSADAVDALKTCACLLKGCRIELAKC 1084
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            KAENIVISTNIRNFQGDIVKEMQIGIEEGIVPSISSSCVPDSSSISSIGDSSFY--RALL 1499
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RDRKVESILNEMKELDSKLHIQEVQLMT-------KIEAC-----IELEKI 1830
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PPGEDKTQGSSECISELSFSGPNALVPMDFLGNQEDIHNLQLRVKETSNENLRLLHVIED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               HTSETTERTPKHD-VHQICDKDAQQDLNLDIEKITETGALK---PTGECSGEQSPDTNYE 1731
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ------PCHDRIRFFSSDDGIGRLGITRKRINGTFLLKILPPI-----QSADL--- 1003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TLEMESKLAAEKKQTEQLSLELEVARLQLQGLDLSSRSLLGIDTEDAIQGRNESCDISKE 1675
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EMDVLDGLKMEATEVEKLF------GRALPIRKLMAVATH------CFTS-- 961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   QSL----EKLEEKMESQGIMKNKEIQELEQLLSSERQELDCLRKQYLSENEQWQQKLTSV 1615
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EQTGDMSLLSNLEGAVSANQCSVDEVFCSSLQEENLTRKETPSAPAKGVEELESLCEVYR 1559
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PE----SIIPELQTAAQ-----KVGRDFNTFIKTDNTCGPEPPL-----VERLEKKVEEGE 873
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               QMHFAELQEK-------FLSLQSEHKILHDQHCQ--MSSKMSELQTYVDSL 1441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NEVKILNDDSGLLHGELVEDIPGGEF----GEQPNEQHPVSLAPLDESNSYEHLTLSDKEV 1399
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ----PVPDPSVLVQKFDMKDFSGKWFITRGLNP--------TFDAFDC 725
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ----RTTGGRS-----SRPLSAFRSGFSKGIFDIVPLPSK---------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               --DWYILSSKVENSPEDYIFVYYKGRND------AWDGYGGSVLYTRSAVL 826
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               QLHEFHTEENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLYQD--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ------KK---ENSDLSE 1843
                                                                           PRT; 2748 AA
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Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Matches 283;
                                                                           1269 YEDLVKCKENPDMEFLK-EKSAKLGHTVVSNEAYSELEKKLEQPSLEYLVEHAKATNHHL 132:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1003 TNHHLLSDSAYEDLVKCKENPDMEFLKEKSAKLGHTVVSNEAYSELEKKLEQPSLEYLVE 1062
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1063 HAKATNHHLLSDSAYEELVKCKENPDVEFLKEKSAKLGHTVVSNEAYSELEKKLEQPSLE 1122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BARRELL B., RAJANDREAM M.A., WALSH S.V.; Submitted (JUL-1995) to the EMBL/GenBank/DDBJ databases EMBL; Z50046; CAA90372.1; -. SGD; L0001287; NUM1. PFAM; PF00169; PH; 1. SEQUENCE 2748 AA; 313030 MW; FEEE7EDD CRC32;
618 LKECRLE-LAKCİSNPAC-----AANVACLQTCNNRPDETECQIKCGDLFENSVVDEFN 670
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NUM1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STRAIN-AB972;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Submitted (JUL-1995) to the EMBL/GenBank/DDBJ databases
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                                                                                                                                                                                                                                                                                                                                    464 GRALPIRKLRMALAPHSNFLANHETIKYYVGSKLPGHKRFSWGWEDYFGSIVVAK-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        325 RND---AWDGYGGSV------IYTRSPTLPESIIPN-----LQKAAKSVGRDF--- 364
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         276 VQTFVQDPDLPGALYNHDNEFLHYQ------DDWYILSSQIENKPDDYIFVYYRG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  801 LAYLVEHAKATDH----HLLSDSAYEELVKCKENPDMEFLKEKSAKLGHTVVSNEAYSEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  116 TFVIVPRVDAVDALKTCACLLKECRIELAKCIANPSC-----AANVACLQTCNNRPDET 169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  748
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STRAIN-AB972;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Saccharomycetaceae; Saccharomyces.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Eukaryota;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Saccharomyces cerevisiae (Baker's yeast)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NUM1P.
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                                                                                                                                                                                                                                                                                                                                                                                    YLVEHAKATNHHLLSD---SAYEELVKCKENPDVEFLKEKSAKLGHTVVSNEAYSELEK--
                                                                                                                                                                                                                                                                                                                                                                                                                                    --VEKVRDTEMTLFQRLLEGFKELQQDEENFVRELSKEEKEILNE--LQMEA-TEVEKLF 463
                                                                                                                                                                           EFLKEKSAKLGHTVVSNEAYSELEKK------LEQPSLAYLVEHAK--ATDHHLLSDSA 1268
                                                                                                                                                                                                                                                                                    -----KLEQ----PSLAYLVEH-------AKATDHHLLS---DSAYEDLVKCKENPDV 121:
                                                                                                                             PKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKAD-----AVDALKTCTCL 617
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ----NNFITTDNS-----CGPEPPLVERLEKTAEEGEKLLIKEAV-EIEEEVEKE--- 409
                                                                                                                                                                                                                              YE-----DLVKCKENPDMEFLKEKSAKLGHTVVSNEAYSELEKKLEQPSLEYLVEHAKA 1002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           -----LKEKSAKLGHTVVSNEAYSELEKKLEQ------PSLAYLVEHAKATDHHLLSDSA 948
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            VQNFNMKDFSGKWYITSGLNPTFDAFDCQLHEFHMENDKLVGNLTWRIKTLDGGFFTRSA 275
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SAYEDLVKCKENPDV------EFLKEKSAKLGHTVVSSEEYSELQRKYSELEKEVEQPS 800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EKKLEQPSLAYLVEHAKATDHHLLSDSAYEDLVKC-----KENSDV-EF-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ECQI------KCGD--LFENSVVDQFNECAVSRKKCVPRKSDVGEFPVPDRNAV 215
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ., RICHARDS C., HARRIS D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Fungi; Ascomycota; Hemiascomycetes; Saccharomycetales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative 232;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (TrEMBLrel. 01, Last sequence update) (TrEMBLrel. 08, Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1.9%; Score 146; DB 3; Length 2748;
17.9%; Pred. No. 5.4;
rative 232; Mismatches 581; Indels 486;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
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δÃ Db

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1616

RESULT 11 Q03767

Db δÃ Дb δÃ Дb δõ В δÃ DЬ ρy Дb Qy

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PAC PAC PT

Q03767 PRELIMINARY; PRT; Q03767; 01-NOV-1996 (TrEMBLrel. 01, Created)

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Q26024
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         CSERRRAI
                                             Q26024 PRELIMINARY;
Q26024;
Q1-NOV-1996 (TrEMBLrel. 01, C
Q1-NOV-1996 (TrEMBLrel. 01, L
Q1-NOV-1998 (TrEMBLrel. 08, L
TOPOISOMERASE I
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                                                                                                                                                                                                                                                                       2058 AIFDSIIVENIEYQQLVNTTSP 2079
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Plasmodium falciparum.
Eukaryota; Alveolata; Apicomplexa; Haemosporida; Plasmodium.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       949
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LVLVDKTEYQAMKD------NASNKKSLIPSTKAL-----DFVTM-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DVELLRSKLKGYHIIDTTTYNELVSNFN------SPTLKFIEEKAKSKGYRLI 1482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DCQ-----LHEFH----TEENKLVGNLSWRIRTPDGGFFTRSAVQKFVQD-PKYPGILYN 773
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EYLVKHAEQIQSKIISISDFNTLANPSMEDMASKLQKLEYQIVSNDEYI--ALKNTMEKP 1435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ECAVSRKKCVPRK-SDVGDF-----PVPDPSVLVQKFDMKDFSGKWFITRGLNPTFDAF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GPEPPLVERLEKKVEEGERTIIKEVEEIEEEEVEKVRDKEVTLFSKLFEGFKELQRD----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     YIFV---YYKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDFNTFIKTDNTC 855
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LSDSAYEDLVKCKENPDMEFLKEKSAKLGHTVVSNKEYSELEKKLEQPSL-------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PTFDAFDCQLHEFHTEGDNKLVGNISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLY----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DLFENSVVDEFNECAVSRKKCVPRK-SDLGEFPAPDPSVLVQNFNISDFNGKWYITSGLN 1173
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GMNKILVDQIEYDET-----IRKC-----
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              QMLIISKHDYEEKQEAIENPGYEFILEKASALGY-----ELVSEVELDRMKQMIDSPD 1729
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       KLMAVATH-----CFTSPCHDRIRFFSSDDGIGRLGITRKRINGTFLLKILPPIQSAD 1001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     -PAPQLASAEKSSLQK-----RTLSDIENELKAL-------GYVAIRKENLPN 1616
                                                                                                                                                                                                                                                                                                                                                         KILVNESTHKRNEKLLSEPDSEFLTMKAKEQGLIIISEKEYSELRDQIDRPSLDVLKEKA
                                                                                                                                                                                                                                                                                                                                                                                                  RIIVKEV-----EEIEEEVEKEVEKVGRTEMTLFQRLAEGFNELKQDEENFVRELSKEEM 1385
                                                                                                                                                                                                                                                                                                                                                                                                                                                HPTVIHLSEKASLLNKVLVDKD------DFATMSRSIE----KPTIDFLSTKALSMG- 1998
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEKIDHIVVPLSEYNLMVTNYRNPSLSYLKEKAVLNNHILIKEDDYKNIL-----AVSE
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              HL--NLVLLDQNEYSTLREPLENRNVEDLINTLSKLNYIAIPNTIYQDLIGKYE----N 1855
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ------DAVDALKTCACLLKGCRIELAKCIANPACAANVACLQTCNNRPDETECQIKCG 1114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LRTTGGRSSRPLSAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKLVGVLACAFLIVPSA 1061
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                                                                                                                                                                                                                                                                                                             EFLDEIKMEASEVEKLFGKALP 1407
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ------NHDNEYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDAWDG
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Last sequence update)
Last annotation update)
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SEQUENCE
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                               1097
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SKRKSNELKEKNYLKEGKKKYVEKKSRTV----KDETKLTNVIKKETQNNKK------PK 128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EKVRDTEMTLFORLLEGFKELQODEENFVRELSKEEKEILNELQMEATEVEKLFGRALPI 469
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    KTAIVAIFILSVASKADAVDALKTCTCLLKECRLELAKCISNPACAANVACLQTCNNRPD 649
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         KLLKKS---EENF----EPINRW-WEKIDDQTDIQWNY---
KRKSSHLTSUTNILSDASDSTINDVNNEYDENGINKKLSYATTVGKENDVDDKNSP-IEV 666
                                                                                              LTAPLLLKLVGV.LACAFLIVPSADAVDAL--KTCACLLKGCRIELAKCIANPACAANVAC 1096
                                                                                                                                                                                                                               EMDVLDGLKMEATEVEKLFGRALPIRKLMAVATHCFTS - - - PCHDRIRFFSSDDGIGRLG
                                                                                                                                                                                                                                                                  DFLALRY-GGE .-----DIDEEADTV------GCCSLRVEHISFAHDIPFK
                                                                                                                                                                                                                                                                                                ERLEKKVEEGERTIIKEVEEIEEEVEKVRDKEVTLFSKLFEGFKELQRDEENFLRELSKE
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                                                                                                                                                                                                                                                                                                                                                                                                   INISKDAPVPRIYDNMCGHNWGDIYHDNKVTWLAYYKD-----SINDQIKYTFLS
                                                                                                                                                                                                                                                                                                                                                                                                                                 QKFVQDPKYPGILYN------HDNE--YLLYQDDWYILSSKVENSPEDYIFVYYKG
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ------LEHRGL-IF-----SPPY-VQHHVP-----IFYKSIKIEL-----NA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RKSPRICCGLDSRGLQLFSHGKHNLSPAHSINQNVPKGNSGCKFPKDVALMVWEKWGQFA 589
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RKLRMALAPHSNFLANHETIKYYVGSKLPGHKRFSWGWEDYFGSIVVAKICSSRRIPRYF 529
                                                                                                                                                                ITRKRINGTFL: KILPPIQSADLRTTGGRSSRPLSAFRSGFSKGIFDIVPLPSKNE-LKE 1038
                                                                                                                                                                                              SVD----SKEQKTNDEKVNKIPLPTNLESISSEDCYITLDFLGKDSIRYFNT-----
                                                                                                                                                                                                                                                                                                                                                                RNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDFNTFIKT----DNTCGPEPPLV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KEEEKKMRMEKELPYTYALVDWIREKISSNKAEPPGLFRGRGEHPKQGLLKKRIFPEDVV
                             LQTCNNRFDETERQIKCGDLFENSVVDEFNECAVSRK----KCVPRKSDLGEFPAPDPSV 1152
                                                              IMPTLSAKVFRIYNASITLDQQLKRIKEVYGKTTYSLYSG-ETELHK--
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                                                                                                                                 --- IFCKNKNRDEGVFDQITCSKLNEYLKE 559
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             390;
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1165	 0v	
1522	Db	on.
1119	Qy	DGGFFTRSAVQT 2
1473	рь	
1059	Qy	CQIKCGDLFENSVVDQFNECAVSRKKCVPRKSDVGEFPVPDRNAVVQN 2
1437	Db	50
999	Qy	AKCIANPSCAANVAC 1
1379	Db	:::
955	Qy	DSSHCKDKSQICSIDTSFEEIQRFDLKRGMTLI 98
1321	Db	6; Indels
895	Qy	1.9%;
1266	Db	
842	Qy	TIGR; BB0512; Hypothetical protein.
1207	Db	
795	Qy	
1163	Db	GARLAND S., FUJII C., COTTON M.D., HORST K., ROBERT SMITH H.O., VENTER J.C.;
738	Qy	VAN VUGT R., PALMER N., ADAMS M.D., GOCAYNE J.D., WEIDMAN J., UTTERBACK T., WATTHEY L., MCDONALD L., ARTIACH P., BOWMAN C.,
1115	מם	PETERSON J., KERLAVAGE A.R., QUACKENBUSH J., SALZBERG S., HANSON M.
678	Qy	S S., HUANG W.M., SUTTON G.G., CLAY
1055	Db	STRAIN=ATCC 35210 / B31; MEDLINE; 98065943.
641	Qy	SEQUENCE FROM N.A.
1004	מס	
602	Qy	HYPOTHETICAL 254.2 KD PROTEIN. BB0512.
944	מם	01-JUN-1998 (TrEMBLrel. 06, 01-NOV-1998 (TrEMBLrel. 08,
55	Qy	051465; 01-JUN-1998 (TrEMBLrel. 06,
890	Db	4
51	Qy	RESULT 13
83	Db	UD 803 ITVAFCKKFEIPIEKVFNRSLRLK 826
471	Qy	ш
791	מם	/59
42	QΥ	1332 IIVKEVEELEEEVEKEVEKVGRTE
73	ф	739
38	Qy	1272 GGAVVY
68	מם	704
ω ω	Qy	1213 SAVQKFVQDPNQPGV
64	Db	Db 667 DVSNIN 703
27	Qy	Qy 1153 LVQNFNISDFNGKWYITSGLNPTFDAFDCQLHEFHTEGDNKLVGNISWRIKTLDSGFFTR 1212

1211	1165 KWYITSGLNPTFDAFDCQLHEFHTEGDNKLVGNISWRIKTLDSGFFT	Qy	
1581	1522 TNITGKVDEFVDEVNNKQSIIDSWFLNIKDDVKDWQEKSYSTIEKRINLAELGIKSFEND	Db	
1164	1119 NSVVDEFNECAVSRKKCVPRKSDLGEFPAPDPSVLVQNFNISDFNG	. Qy	
1521	LENKTELIQSFRLDIEQKMKDDKENFYLDFTKEFSSKKKDMQSEIALME	Db	
1118	1059 PSADAVDALKTCACLLKGCRIELAKCIANPACAANVACLQTCNNRPDETECQIKCGDLFE	Qy	
1473	1437 FKDLKIRGEELKYSLENFIASYNDKIQNLEYDLSKN	Db	
1058	999 SADLRTIGGRSSRPLSAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKLYGVLACAFLIV	Qy	
1436	1379 SEEFKSSNKEMI - FELESQLKNLKNLESDLNNVEKDVIRLKEESYHNVSSHLKLLEEDF	Db	
866	HCFTSPCHDRIREFSSDDGIGRLGITRKRINGTFLLKILPPIQ	Qy	
1378		Дb	
954	895 VTLFSKLFEGFKELQRDEENFLRELSKEEMDVLDGLKMEATEVEKLFGRALPIRKLMAVA	Qy	
1320	NLKY	Db	
894	842 GRDFNTFIKTDNTCGPEPPLVERLEKKVEEGERTIIKEV-EEIEEEVEKVRDKE	Qy	
1265		dd	
841	795 SPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKV	Qу	
1206	: :: :: : : : : :	Db	
794	738 V-GNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLYQDDWYILSSKVEN	Qу	
1162		Дb	
737	678 KCVPRKSDVGDFPVPDPSVLVQKFDMKDFSGKWFITRGLNPTFDAFDCQLHEFHTEENKL	Qy	
677 1114	041	Db «X	
1054		2	
641	602 ASKADAVDALKTCTCLLKECRLELAKCISN-PACAANVAC	dd Yo	
1003	DIMNHFNKETRELEENLSKKFAAVL	מם	
601	552HNLSPAHSINQNVPKGNSGCKFPKDVALMVWEKWGQFAK-TAIVAIFILSV	Qy	
943	890 LLSSGKVDLDLIDSEVTTKIKELKFSIESLESYYLEKIDEFRNQGAIYSDELLQ	Db	
552	519 ICSSRRIP	Qγ	
889	837 SNIKSDNOKQIDDFLDRISKDILNRKDSINNEVDSKLSDWQSKLNEITVKIEN	מם	
518	476 LAPHSNFLANHETIKYYVGSKLÞGHKRFSWGWEDYFGSIVVAK	Qy	
836	790DKNNFVISKIEECDYKLKDFKIESEDILNNFKSDLNEFIESKLQIV	Db	
475	428 KELQQDEENFVRELSKEEKEILNELQMEATE-VEKLFGRALPIRKLRMA	Qу	
789	731 LLKTGDI-ESLVIEKYKELKDMSYSQSDEAILGIKEFINRQTEIIKDKSVFMLEDLNKKF	Db	
427	385KTAEEGEKLLIKEAVEIEEEVEKEVEKVRDTEMTLFQRLLEGF	Qy	
730	687 WKDELIALNKSLLDIKVSSEELLSSATLKIESLEKDVNDRMEYV	Db	
3 8 5	SCGPE	Qy	
686	641SQINKTNEEFLSLIQIQKDKGIELSESVFNDLSDHIQKKAIDMHGS	Db	
	279 FVQDPDLPGALYNHDNEFLHYODDWYTT,SSOTENKBBDDYTEVVVBGBNDAWDGVCG	Qy.	

Qу	Db .	Фр	Оy	Оу	Qу	Qu Be Ma	DR SQ			RP	0 0 g	Eddi	385	SU 62	Db	Qy	Db	Qy	В	Qy	망	٥ ٧	ф
617 LLKECRLELAKCISNPACAANVACLQTCNNRPDETECQIKCGDLFENSVVDEFNECA 673	558 HSINQNVPKG-NSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADAVDALKTCTC 616 :	502 RFSWGWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGKHNLSDA 557	442 SKEEKBILNELQMEATEVEKLEGRALPIRKLRMALAPHSNELANHETIKYYVGSKLPGHK 501 : : : : : : : : :	391 EKLLIKEAVEIEEEVEKEVEKVRDTEMTLFQRLLEGFKELQQDEENFVREL 441	347 SIIPNLQK-AAKSVGRDFNNFITTDNSCGDEPPLVERLEKTAEEG 390 : : ::: ::	Query Match 1.9%; Score 143.5; DB 5; Length 1558; Best Local Similarity 17.9%; Pred. No. 3.5; Matches 206; Conservative 153; Mismatches 377; Indels 413; Gaps 50;	Science 282:1126-1132(1998). Science 282:1126-1132(1998). EMBL; AE001424: AAC71972.1; SEQUENCE 1558 AA; 175658 MW; D49C2605 CRC32;	DAMS M.D., VENTER J.C., HOFFMAN S.L.; sequence of the human malaria parasite Plasmodium	S., MASON T., YU K., DN C., LAI Z., SCHWA	E FROM N.A.	PFB0915W. Plasmodium falciparum. Eukaryota; Alveolata; Apicomplexa; Haemosporida; Plasmodium.	1999 (TremBLrel. 10, Last se 1999 (TremBLrel. 10, Last an ANTIGEN.	96275; 96275; 1-MAY-1999 (Tremblical 10, Cre	ULT 14	FISE)EENFVRELSKEEMEF		1302 FSTFIRTDNTCGPEPALVERIEKTVEEGERIIVKEVEEIEEEVEKEVEKVGRTEMTLFQ- 1361	1701 EMVDVISSDKESFEGQIELINKNISEFSEKISLYRNNIETSIENEYNSFSKSIKSD 1756	DYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELEK	641 DFKLEKIDEKVNKKTEDILIQAEVKFLTQQKDLEDKIFELNQKLEHEFTTLSSNLDKVRR 170	212 RSAVOKEVODDNOPGVLYNHDNEYLHYODDWYILSSKIENKPE 125	1582 IFNVKIGLESFKDGFEIKAREIFSNLQNEAKKIEQSVHLDFKNIGE-SLNLKVLDLEKFV 1640

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RESULT 15
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O92LVO;
O1-MAY-1999 (TrEMBLrel. 10, Created)
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O1-MAY-1999 (TrEMBLrel. 10, Last annotation update)
CAG ISLAND PROTE: W
Helicobacter py.oxi J99.
Bacteria; Proteobacteria; epsilon subdivision; Helicobacter group;
Helicobacter.
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SEQUENCE FROM N.A.
STRAIN-J99;
ALM R.A., LING L.-S.L., MOIR D.T.,
SMITH D.R., NOONAN B., GUILD B.C.,
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DIDEDIGEDKDEVIDLIVQKEKRIEKVKEKKKKLEKKVEEGVSGLKKHVDEVMKYVQKID 1394
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 KING B.L., BROWN E.D., I
DEJONGE B.L., CARMEL G.,
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14888	., CARUSO A., URIA-NICKE MERBERG D., MILLS S.D., quence Comparison of Two	
	197:176-180(1999). 197:176-180(1999). 1001481; AAD06047.1; 1819 AA; 207505 MW; 8809F	
ма Вер	1.9%; Score 142.5; DB 2; Length 1819; sst Local Similarity 19.0%; Pred. No. 4.9; tches 267; Conservative 199; Mismatches 524; Indels 417; Gaps 68:	
ν, ά	178 LFENSVVDQFNECAVSRKKCVPRKSDVGEFPVPDRNAVVQNFNMKDFSGKWYITSGLNPT 237	
ਲੋਂ ਦੌ	238 FDAFDCQLHEFHMENDKLVGNLTWRIKTLDGGFFTRSAVQTFVQDPDLPGALYNHDNEFL 297	
Ÿ	98 HYQDDWYILSSQIENKPDDYIFVYYRGRNDAWDGYGGSVIYTRSPTLPESIIPNLQKAAK 35	
ŏ	ECISNGGNYEECLKLIKDKKLQDQMK 3	
ਲੋਂ ਖੋ	358 SVGRDFNNFITTDNSCGPEPPLVERLEKTAEEGEKLLIKEAVEIEEEV 405	
Ϋ́	VEKVRDTEM-TLFQRLLEGFKELQQDEENFVRELSKEEK-EILNELQMEATEVEK	
ਠੱ	412 KECLKLINDPEIREKFRKELELQKELQEYKDCIKNAKTEAEKNECLKGLSKEAIERLK 469	
ট ই	464 GRALPIRKLRMALAPHSNFLANHETIKYYVGSKLPGHKRFSWGWEDYFGSIVVAKICSSR 523	
Ÿ	RKSPRICCGLDSRGLQLFSHGKHNLSPAHSINQNV	
ਲ	TDEERKECL~KNLP	
Ā	FPKDVA	
σ	75 LKAYKDCASQAKTEAEKKECEKLLTPEAKKLLEEEAKESVK	
ਲੇ ਕੁ	617 LLKECRLELAKCISNPACAANVACLQTCNNRDDETECQIKCGDLFE 662	
Ÿ	DEFNECAVSRKKCVP	
ਰ	KDLPK	
ਲੇ ਕ	723 FDCQLHEFHTEENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDÞKYÞGILY 773 1 : : : : : : :	
Y	NEYLLYQDDWYILSSKVENSÞEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLÞESI 83	
ъ	773 KEKOECEKLLTPEARKLLEES-KKSVKAYLDCVSKAKNEAERKECEKLLTPEARKLLEEA 831	
' Υ	31 IPELQTAAQKVGRDFNTFIKTDNT ::	
b	32 RESVRAYKUCVSRARNEKEKQECEKLLTPEARKLLEESKK	
ъ ч	884 E-EEVEKVRDKEVTLESKLFEGFKEL	
٧	25 DVLDGLKMEATEVE-KLFG	
σ	EAEKKROVKDI PKDI OKKVI AKFOV	

D VY	Db Qy	Db Qy	Qy Db	Qy Db	Qy Db	Qy Db	Оу	ОУ
Qy 1391IKMEASEVEKLF 1402	OY 1355 EMILFORLAEGF-NELKQDEENFVRELSKEEMEFLDE 1391	QY 1295 AKSIGRDESTFIRTDNTCGPEPALVERIEKTVEEGERIIVKEVEEIEEEVEKEVEKVGRT : : : : : :	QY 1239 QDDWYILSSKIENKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELEKA : :	QY 1180 -DCQLHEFHTEGDNKLVGNISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLYNHDNEYLHY	QY 1121 - VVDEFNECAVSRKKCVPRKSDLGEFPAPDPSVLVQNENISDENGKWYITSGLNPTEDAF : : : : : : : : :	QY 1071 ACLLKGCRIELAKCIANPACAANVACLQTCNNRPDETECQIKCGDLFENS-	1041 APLILKIVGVLA	QY 981 TRKRINGTELLKILPPIQSADLRTTGGRSSRPLSAFRSGFSKGIFDIVPLPSKNELKELT
	EEE 1391 : : : : : : : : : : : : : : : : : :	PERIIVKEVEEIEEEVEKEVEKVGRT 1354 :: :: : E:: :: : 1331	AVVYTRSSVLENSIIDELEKA 1294 KEKQECEKLLTDEARKFLEKQ 1275	AVQKFVQDPNQPGVLYNHDNEYLHY 1238 :	QNFNISDFNGKWYITSGLNPTFDAF 1179 : : :EEAKESVKAY 1205	NNRPDETECOIKCGDLFENS- 1121 : :	-CAFLIVPSADAVDALKTC 1071 :	NFRSGFSKGIFDIVPLPSKNELKELT 1040

Search completed: October 13, 1999, 22:45:24 Job time: 742 sec

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Result
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Perfect score:
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      Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
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US-08-460-309-5-3
US-08-480-604A-27
US-08-471-044A-1
US-08-471-046A-1
US-08-471-047-1
US-08-480-726A-5
US-08-486-726A-5
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sequence 1, Application US/07915246
Patent No. 5401836
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                                                                                                                                                                                                                                                                                                                                                  REGISTRATION NUMBER: 32,167
REFERENCE/DOCKET NUMBER: 91
TELECOMUNICATION INFORMATION:
TELEPHONE: 312 707-8889
TELEFAX: 312 707-9155
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT: Bellmare, Guy
APPLICANT: Boivin, Rodolphe
TITLE OF INVENTION: A BRASSICA REGULATORY SEQUENCE FOR
TITLE OF INVENTION: ROOT-SPECIFIC OR ROOT-ABUNDANT GENE EXPRESSION
NUMBER OF SEQUENCES: 5
                                                                     HYPOTHETICAL: I
                                                                                                                                TOPOLOGY: li
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COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NAME: Pochopien, Donald J
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STATE: Illino
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                                                                                                               REFERENCE/DOCKET NUMBER: 01
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 576-0200
TELEFAX: (415) 576-0300
INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
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                                                                                                                                                                                                                                                                                                    FILING DATE: 13-OCT-1994
CLASSIFICATION: 424
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/
FILING DATE: 29-JAN-1993
ATTORNEY/AGENT INFORMATION:
NAME: Quine, Jonathan A.
REGISTRATION NUMBER: P-41,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GENERAL INFORMATION:
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APPLICANT: Kaslow, David C.

TITLE OF INVENTION: Cloning and Expression of Plasmodium
TITLE OF INVENTION: fallciparum Transmission-Blocking Target Antigen, Pfs230
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APPLICATION NUMBER: US,
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NUMBER OF SEQUENCES: 4
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1491 gtttcagaggttgcttgaagggtttaaggagttgcaacaagatgaagagaattttgtgag 1550
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1371 ggtggaaaggcttgagaaaacagcggaagagggcgagaagttgttgataaaagaagctgt 1430
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1611 tgaaaagctttttgggcgcgcg 1632
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1431 agagatagaagaggaggttgaaaaagaggtggagaaggttagagatactgagatgacttt 1490
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DEVELOPMENTAL S
TISSUE TYPE: F
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COUNTRY: USA
ZIP: 94111-3834
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SOFTWARE: PatentIn Release #1.0, Version #1.30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDIUM TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STREET: Two Embarca
CITY: San Francisco
                       STRANDEDNESS:
                                                                                        CENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ADDRESSEE:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GGCGGTGGAAATGGAGGCGGTGGAGGAGGTGGAGGTGCACACGGTGGTGGATACGGTGGT 1115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GGTGCTGGTGCTGGAGGAGGATATGGAGGTGGCGGTGCAGGTGGACATGGAGGTGGTGGA 1055
                                                 nucleic acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               California
                                                                                     9636 base pairs
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linear
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                   single
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47.38;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
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US-08-323-170B-1
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Patent No. 5837496
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Best Local 9
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INFORMATION FOR SEQ ID NO:
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                                                                                                           APPLICATION NUMBER: US 07/472,319
FILING DATE: 30-JAN-1990
PRIOR APPLICATION DATA:
APPLICATION UNMBER: US 07/919,951
FILING DATE: 27-JUL-1992
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                     SOFTWARE: PatentIn Release #1.0, Version #1.25 CURRENT APPLICATION DATA:
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                                                                                                                                                                                                                                                                                                   CLASSIFICATION: 435
PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                        COMPUTER READABLE FORM:
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                                                                                                                                                                                                                  FILING DATE: 21-SEP-1994 PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NUMBER OF SEQUENCES:
               REFERENCE/DOCKET NUMBER: P-LA 9721
TELECOMMUNICATION INFORMATION:
TELEPHONE: (619) 535-9001
TELEPHAX: (619) 535-8949
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nes 94; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                    MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
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                                                                                                                                                                                                                                                  FILING DATE: 22-SE APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                   APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                       FILING DATE:
                                                                                                                                                                                                                                                                                                                                                     APPLICATION NUMBER:
                                                                               NAME: Campbell, Cathryn A. REGISTRATION NUMBER: 31,815
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California
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ilarity 51.6%;
Conservative
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149..9556
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nmmber: US PCT/US 94/10730
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Fragments and
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Drive, Suite 700
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Patent No. 5872231 5840863
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GENERAL INFORMATION:
APPLICANT: Engvall, Eva
APPLICANT: Leivo, Ilmo
TELEFAX: (619) 535-89-
INFORMATION FOR SEQ ID NO:
                                                                                                                        APPLICATION NUMBER: US 07/
FILING DATE: 30-7AN-1990
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/
FILING DATE: 27-JUL-1992
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE CHARACTERISTICS:
LENGTH: 6942 Fase pairs
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                                 REFERENCE/DOCKET NUMBER: P-
TELECOMMUNICATION INFORMATION:
TELEPHONE: (619) 535-9001
                                                                                                                                                                                                                                        PRIOR APPLICATION DATA:
APPLICATION NUMBER: US PCT/US 94/10730
FILING DATE: 21-SEP-1994
PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                         SOFTWARE: PatentIn Release #1.0, CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    COMPUTER READABLE FORM:
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STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                                APPLICATION NUMBER: FILING DATE: 22-SEP CLASSIFICATION: 435
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                                                                                                                                                                                                                                                                                                                                                                                      SOFTWARE:
                                                                                                                                                                                                                                                                                                                                                                                                        COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CITY: San Diego
STATE: California
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              STREET:
                                                                                         NAME: Campbell, Cathryn A. REGISTRATION NUMBER: 31,81
                                                                                                                                                                                                                                                                                                                                                                                                                                               MEDIUM TYPE:
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4370 La Jolla Village Drive, Suite 700
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                   (619) 535-8949
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                                                                                                                                                                                                                                                                                                                                                                                                                                               Floppy disk
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                                                                                                                                                                   US 07/919,951
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                                                                                           31,815
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                                                                          P-LA 9721
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                                                                                                                                                                                                                                                                                                                                                                                            Version #1.25
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TOPOLOGY:
US-08-125-077-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GENERAL INFORMATION:
APPLICANT: Roop, Do
APPLICANT: Rothnago
APPLICANT: Greenha.
APPLICANT: Yuspa, (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 3, Application US/08147777 Patent No. 5914265
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
INFORMATION FOR SEQ ID NO: 3:
                                                       TELECOMMUNICATION INFORMATION:
TELEPHONE: (213) 489-1600
                                                                                                                           APPLICATION NUMBER: 07/876,289
FILLING DATE: April 30, 1992
APPLICATION NUMBER: Unassigned (204/144)
FILLING DATE: October 29, 1993
ATTORNEY/AGENT INFORMATION:
NAME: Walburg, Richard J.
                                                                                                                                                                                                                                                                                                                                                                                                                                      COMPUTER READABLE FORM: MEDIUM TYPE: 3.5" Di:
                                                                                                                                                                                                                                            PRIOR APPLICATION DATA: PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                            SOFTWARE: WordPerfect (Version 5.1)
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               5310 TGAAGAAGCTGTTTGGAGAGTCCCCGGGGGAAAATGAAGAAATGGAGAAGGATCTCCGGG 5369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         5250 AGACACAAAAGGAAATTGCTGAAGATGAGTTGGTAGCTGCAGAAGCCCCTTCTGAAAAAAAG 5309
                                                                                                                                                                                                                                                                                    PRIOR APPLICATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CORRESPONDENCE ADDRESS
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   5190 TGGAAGGGCTTCAGAAAGAGATTGACCAGATGATTAAAGAACTGAGGAGGAAAAATCTAG 5249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TITLE OF INVENTION: KERATIN K1 EXPRESSION VECTORS TITLE OF INVENTION: AND METHODS OF USE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1373 tggaaaggcttgagaaaacagcggaagagggcgagaagttgttgttgataaaagaagctgtag 1432
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE CHARACTERISTICS:
LENGTH: 6942 base pairs
                     TELEFAX: (213) 955-0440 TELEX: 67-3510
                                                   TELEPHONE:
                                                                                             REGISTRATION NUMBER: 32, REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                    CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                            APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                SOFTWARE:
                                                                                                                                                                                                                                                                                                                                                                                              COMPUTER: IBM PC compatible OPERATING SYSTEM: IBM MS-DOS (Version 5.0)
                                                                                                                                                                                                                                                                                                                            FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COUNTRY:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TYPE: nucleic acid
STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    92;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               90017
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                h 1.9%; Score 38.6; DB Similarity 50.8%; Pred. No. 0.71;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   California
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     E: LYON & LYON 611 West Sixth Street
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Rothnagel, Joseph A. Greenhalgh, David A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               U.S.A.
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                                                                                                                                                                                                                                                                                      DATA:
                                                                                                                                                                                                                                                                                                        800
                                                                                                                                                                                                                                                                                                                                                                                                                                      Diskette, 1.44 Mb storage
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: described below:
07/876,289
                                                                                                                                                                                                                                                                                                                                            US/08/147,777
                                                                                                       32,327
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STRANDEDNESS:

TOPOLOGY: line
MOLECULE TYPE: 1
US-08-147-777-3
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                                                                                                                                                 CLASSIFICATION:
ATTORNEY/AGENT INFORMATION:
ATTORNEY/AGENT INFORMATION:
NAME: Paul, Thomas D.
REGISTRATION NUMBER: 32,714
REFERENCE/DOCKET NUMBER: D-54
TELECOMMUNICATION INFORMATION:
TELEPHONE: 713/651-5246
TELEPHONE: 713/651-5246
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                                                                                                                  INFORMATION FOR SEQ ID NO:
                 MOLECULE TYPE:
                                                                              SEQUENCE CHARACTERISTICS:
LENGTH: 24979 base pairs
                                                                                                                                                                                                                                                                                                                                                                                          COMPUTER READABLE FORM: MEDIUM TYPE: Floppy
HYPOTHETICAL:
                                                                                                                                                                                                                                                                                                                        CURRENT APPLICATION DATA:
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APPLICANT:
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TELEFAX: '...'
762829
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LENGTH: 24979 base pai
                                                                                                                                                                                                                                                                                                                                                    COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                              COUNTRY: U.S.A. ZIP: 77010-3095
                                TOPOLOGY:
                                                STRANDEDNESS:
                                                                    TYPE:
                                                                                                                                                                                                                                                                                       FILING DATE:
                                                                                                                                                                                                                                                                                         APPLICATION NUMBER: PORTILING DATE: 19930428
                                                                                                                                                                                                                                                                                                                                    SOFTWARE: PatentIn Release #1.0, Version #1.25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ADDRESSEE:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Houston,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   H: 24979 base pairs nucleic acid
                                                                  NUCLEIC ACID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                Texas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           E: Fulbright & Jaworski
1301 McKinney, Suite 5100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Rothnagel, Joseph A. Greenhalgh, David A. Yuspa, Stuart H.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Roop, Dennis R.
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                                  linear
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NO
                                                                                                                                                                                                                                                                                                                                                                                        Floppy disk
                DNA (genomic)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DNA (genomic)
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                                                  double
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DEVELOPMENT OF A VECTOR TO TARGET GENE EXPRESSION TO THE EPIDERMIS OF TRANSGENIC ANIMALS
                                                                                                                                                                                                                                                                                                         PCT/US93/03985
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: Sequence 27, Application US/08480604A

: Patent No. 5736139
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GENERAL INFORMATION:
                                                                                       APPLICATION NUMBER: US 08/
FILING DATE: 25-OCT-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/
FILING DATE: 02-DEC-1993
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/
                                                                                                                                                                                                       APPLICATION NOWMER: US 08/405,496
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/405,496
FILING DATE: 16-MAR-1995
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/329,154
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APPLICANT: THALLEY,
APPLICANT: PADHYE, N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             6918 GAGAAGAAGGAAGAAGAAGAAGAATAATGCA 6885
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OPERATING SYSTEM: PC-DOS/MS-DOS
SOCTWARE: Patentin Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT: STAFFORD, DOUGLAS C.
TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
TITLE OF INVENTION: PREVENTION OF C. DIFFICILE DISEASE
                                                                                                                                                                                                                                                                                                                                                CLASSIFICATION: 424
PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CORRESPONDENCE ADDRESS:
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ATTORNEY/AGENT INFORMATION
                                                         PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                      APPLICATION NUMBER: US/0
FILING DATE: 07-JUN-1995
                                                                                                                                                                                                                                                                                                                             APPLICATION NUMBER: US 08/422,711
                                                                           FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ADDRESSEE:
                    APPLICATION NUMBER: US 07/429,791 FILING DATE: 31-OCT-1989
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         220 MONTGOMERY STREET, SI
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O
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                                                                             04-DEC-1992
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                                                                                               US 07/985,321
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Pred. No. 1.6;
0; Mismatches 110;
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US-08-480-604A-27
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Patent No. 5919665
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INFORMATION FOR SE) ID NO:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               STRANDEDNESS:
TOPOLOGY: line
MOLECULE TYPE: '
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1522 ttgcaacaagatgaagagaattttgtgagggagttgagtaaaggaagggaaggaaagtctg 1581
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             FILING DATE: 02-DEC-1993 PRIOR APPLICATIO: DATA:
                                                                                        APPLICATION NUMBER: US/08/405,496.
FILING DATE: 16-MAR-1995
CLASSIFICATION: 424
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/329,154
FILING DATE: 25-OCT-1994
                                                                                                                                                                                                    COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS SOFTWARE: Patentin Release #1.0, CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                 COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: WILLIAMS, JAMES A.
TITLE OF INVENTION: VACCINE FOR CLOSTRIDIUM BOTULINUM
TITLE OF INVENTION: NEUROTOXIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1642 aggaaacttag:taaatttcgatgattgattcagacaatatatagtcatatggattat 1701
                                                     PRIOR APPLICATION DATA: APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                  NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NAME: INGOLIA, DIANE E. REGISTRATION NUMBER: 40, REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                       ADDRESSEE: MEDLEN & CARROLL, LLP
STREET: 220 MONTGOMERY STREET, SUITE 2200
CITY: SAN FRANCISCO
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APPLICATION NUMBER:
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49.7%; Pred. No. 0.91;
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                                                       US 08/161,907
                                                                                                                                                                                    US/08/405,496A
US 07/985,321
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SEQUENCE CHARACTERISTICS:
LENGTH: 3891 base pairs
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0,
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APPLICANT:
                                                                                                                                                                                                                                                                                                     APPLICANT:
APPLICANT:
APPLICANT:
                                                                                                                                                       CORRESPONDENCE ADDRESS:
ADDRESSEE: CIBA-GEIGY Corporation
                                                                                                                                                                                  APPLICANT: Estruch, Juan J
TITLE OF INVENTION: No. 5770696el Pesticidal Proteins and Strains
NUMBER OF SEQUENCES: 50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               3382 GTAGGTATTAGAG 3394
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TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 705-8410
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PRIOR APPLICATION DATA:
                                                                                                                              ADDRESSEE: CIBA CL. 7 Skyline Drive
                                                                                    COUNTRY: UZIP: 10532
                                                                                                                   STATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            / Match 1.9%; Score 37.8; DB 4; Length 3891;
Local Similarity 49.7%; Pred. No. 0.91;
nes 96; Conservative 0; Mismatches 97; Indels 0
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICATION NUMBER: US 0 FILING DATE: 31-OCT-1989
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                                                                                                  USA
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                                                                                                                                                                                                                                                                                    Carr, Brian
                                                                                                                                                                                                                                                                                                                    Warren, Gregory W
Koziel, Michael G
Mullins, Martha A
                                                                                                                                                                                                                                                       Desai, Nalini M
Kostichka, N. Kristy
                                                                                                                                                                                                                                                                                                       Nye, Gordon J
                                                                                                                                                                                                                                          Duck, Nicholas B
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    Version #1.30B
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NAME/KEY: misc_feature

LOCATION: 2475..5126

OTHER INFORMATION: /note= "Coding sequence for the 100"

OTHER INFORMATION: kd VIPLA(a) protein. This coding sequence is repeated in OTHER INFORMATION: NO:4 and translated separately."

US-08-471-033-1
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INFORMATION FOR SEQ ID NO: 1:
                                                                                                                   OTHER INFORMATION: FEATURE:
                                                                                                                                                                                                FEATURE
                                                                                                                                                                                                                                                                      MOLECULE TYPE: |
ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                  TELECOMMUNICATION INFORMATION: TELEPHONE: 919-541-8582
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICATION NUMBER: US 08/037,057 FILING DATE: 25-MAR-1993 ATTORNEY/AGENT INFORMATION:
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APPLICATION NUMBER: US 0
FILING DATE: 09-SEP-1994
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                                                                                                                                                                                                                                                                                                                                                                                                            TELEPHONE: 919-541-8689
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NAME: Pace, Gary M. REGISTRATION NUMBER: P-40,403
                                                                                                                                                      NAME/KEY: CDS
LOCATION: 1082..2467
                                                                                                                                                                                                            INDIVIDUAL ISOLATE: NRRL B-21058
                                                                                                                                                                                                                                     ORGANISM: Bacillus cereus STRAIN: AB78
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICATION NUMBER: US 0 FILING DATE: 23-MAR-1994
                                                                                                                                                                                                                                                                                                                                                       TYPE:
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                                                                                                                                                                                                                                                                                                                                                  nucleic acid
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                                                                                                                                    /product= "VIP2A(a)"
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QY B Qy B δÃ В Š 밁 Matches 143; Query Match 574 gtttgcacatttgttatcgttcccagagttgatgccgttgatgctcttaaaacttgtgct 633 638 TATTGAGTACCAAAATCCA 620 634 tgtttactcaaagaatgca 652 698 CAAAAACGACCGTTTATGGCACTTGTTTTGTTTTTAACAAAAGCGTTAAAAACTCATCCA 639 514 ggcatgactttgattottgaaaagcaatggagacaattcatacaattggctatcgtattg 573 454 tctcagatatgcagcatcgatacaagttttgaggaaatacaaagatttgatctcaaaagg 513 394 cggttgtttacatcttataagacaagttctttctcagattctagccattgcaaggataaa 453 938 CCCCCCTTCTTATTAAAGAGCCTGTAAAATTATAGAGAAGATGCTTTTTTTCACTCCCTC 879 334 cctcctaccaacataatcatgatgaaaattcgatccaacaatggatattttaattctttc 393 Match 1.9%; Local Similarity 44.8%; CGTTTGTTTTTTTCTTATAATTTAACTATAACCTAAAGATAGAGCATCCGTTATGGAAAA 819 Conservative 0; Mismatches 176; Indels Score 37.4; Di Pred. No. 1.4; DB 3; Length 6049; 0; Gaps 699 0

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US-08-471-044-1/c
US-08-471-044-1
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INFORMATION FOR SEQ ID NO: 1:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0,
CURRENT APPLICATION DATA:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                REFERENCE/DOCKET NUMBER: CG
TELECOMMUNICATION INFORMATION:
TELEPHONE: 919-541-8582
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APPLICATION NUMBER:
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ATTORNEY/AGENT INFORMATION:
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ORIGINAL SOURCE:
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                                                                                                                                                                                                   FEATURE:
                                                                                                                                                                                                                                                                                                                                                                  ORGANISM: Bac
STRAIN: AB78
INDIVIDUAL ISC
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                                                                                                                            NAME/KEY:
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                        OTHER INFORMATION:
OTHER INFORMATION:
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REGISTRATION NUMBER: 40,403
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                                                                                                                                                                                                                                   OTHER INFORMATION:
                                                                                                                                                                                                                                                                   NAME/KEY:
LOCATION:
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INVENTION: No. 5840868el Pesticidal Proteins and Strains
F SEQUENCES: 50
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Koziel, Michael
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                        /note= "Coding sequence for the 100 \, kd VIP1A(a) protein. This coding sequence is repeated NO:4 and translated separately."
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US-08-463-483A-1/c
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Matches 143; Conserv
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               PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08,
FILING DATE: 23-MAR-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08,
FILING DATE: 25-MAR-1993
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APPLICANT:
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TITLE OF INVENTION: No. 5849870el Pesticidal Proteins and Strains
NUMBER OF SEQUENCES: 50
                                                                                                                        CLASSIFICATION: 530
PRIOR APPLICATION UNIFER: US 08/314,594
FILING DATE: 39-SEP-1994
                                                                                                                                                                                                                     SOFTWARE: PatentIn Release #1.0, Version #1.30B CURRENT APPLICATION DATA: APPLICATION NUMBER: US/08/463,483A
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ATTORNEY/AGENT INFORMATION:
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Kostichka, N. Kristy
Duck, Nicholas B
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Koziel, Michael G
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                                  US 08/037,057
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                                                                                                                                                                  Patent No. 5866326
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Best Local Similarity
Matches 143; Conserv
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                                    APPLICANT:
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INFORMATION FOR SEQ ID NO: 1:
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TELECOMMUNICATION INFORMATION:
TELEPHONE: 919-541-8615
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                                                                                                                                                                                                                                                                                                                                   698 CAAAAACGACCGTTTATGGCACTTGTTTGTTTTTTAACAAAAGCGTTAAAAACTCATCCA 639
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                                                               574 gtttgcacatttgttatcgttcccagagttgatgccgttgatgctcttaaaacttgtgct 633
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 878 CGTTTGTTTTTTTTTATAATTTAACTATAACCTAAAGATAGAGCATCCGTTATGGAAAA 819
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                334 cctcctaccaacataatcatgatgaaaattcgatccaacaatggatattttaattctttc 393
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FEATURE:
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                                                                                                                                                                                                                                                                                                                                                                                                     514 ggcatgactttgattcttgaaaagcaatggagacaattcatacaattggctatcgtattg 573
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                454 teteagatatgeageategatacaagttttgaggaaatacaaagatttgateteaaaagg 513
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          394 oggitgittacatottataagacaagticttictoagatictagocaitgoaaggataaa 453
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    938 CCCCCCTTCTTATTAAAGAGCCTGTAAAATTATAGAGAAGATGCTTTTTTTCACTCCCTC 879
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               OTHER INFORMATION: /note= "Coding sequence for the 100 OTHER INFORMATION: kd VIP1A(a) protein. This coding sequence is repeated in SECOTHER INFORMATION: NO:4 and translated separately."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NAME/KEY: misc_feature LOCATION: 2475..5126
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           INDIVIDUAL ISOLATE: NRRL B-21058
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TOPOLOGY:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NAME: Spruill, W. Murray
REGISTRATION NUMBER: 32,943
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LOCATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NAME/KEY: CDS
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                                                                                                                                                        INFORMATION:
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                                                                                  Warren, Gregory W
Koziel, Michael G
Mullins, Martha A
Nye, Gordon J
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                                  Desai, Nalini M
Kostichka, N. Kristy
      Estruch, Juan J
                                                                     Carr, Brian
                      Duck, Nicholas B
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US-08-471-046A-1
Query Match 1.9%;
Best Local Similarity 44.8%;
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INFORMATION FOR SEQ ID NO: 1:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICATION NUMBER: US 08/037,057
FILING DATE: 25-MAR-1993
ATTORNEY/AGENT INFORMATION:
NAME: Melgs, J. Timothy
REGISTRATION NUMBER: 38,241
REFERENCE/DOCKET NUMBER: CGC1695/CIP3/DIV8 - SQLV4
                                                                                                                                                                                             FEATURE:
                                                                                                                                                                                                                                                                       FEATURE:
                                                                                                                                                                                                                                                                                                                                               MOLECULE TYPE:
ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICATION NUMBER: US 0 FILING DATE: 23-MAR-1994 PRIOR APPLICATION DATA:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICATION NUMBER: US 08/463,483
FILING DATE: 05-JUN-1995
PRIOR APPLICATION-DATA:
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OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.30B
CURRENT APPLICATION DATA:
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                                                                                     OTHER INFORMATION: /note= "Coding sequence for the 100 OTHER INFORMATION: kd VIP1A(a) protein. This coding sequence is repeated in OTHER INFORMATION: NO:4 and translated separately."
                                                                                                               OTHER INFORMATION:
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LOCATION:
                                                                                                                                                     NAME/KEY: misc_feature LOCATION: 2475..5126
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                                                                                                                                                                                                                                                                                                                           ORGANISM:
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1082..2467
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                                                                                                                                                                                                           /product= "VIP2A(a)"
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Score 37.4; DB 3; Length 6049; Pred. No. 1.4;
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 143;

Conservative

Mismatches 176;

Indels

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                                                   TELEFAX: 919-541-8689
INFORMATION FOR SEQ ID NO: 1:
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                                                                                   NAME: Meigs, J. Timothy
REGISTATION NUMBER: 38,241
REFERENCE/DOCKET NUMBER: CG
TELECOMMUNICATION INFORMATION:
TELEPHONE: 919-541-8587
                                                                                                                                                                                                                                                 PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/218,018
FILING DATE: 23-MAR-1994
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APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                            APPLICATION NUMBER: US 08/463,483 FILING DATE: 05-JUN-1995 PRIOR APPLICATION DATA:
                                SEQUENCE CHARACTERISTICS:
                                                                                                                                                                             FILING DATE: 25-MAR-1993
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                 PRIOR APPLICATION DATA:
APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                               CLASSIFICATION: 530 PRIOR APPLICATION DATA:
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TITLE OF INVENTION: No. 5872212el Pesticidal Proteins and Strains
NUMBER OF SEQUENCES: 52
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                                                                                                                                                                                                                                                                                                        APPLICATION NUMBER: US 0 FILING DATE: 09-SEP-1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   COUNTRY: U:
ZIP: 27709
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                    CENGTH:
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6049 base pairs ucleic acid
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Koziel, Michael G
Mullins, Martha A
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Koziel, Michael
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                                                                                                                       CGC1695/CIP3/DIV4 - SQLv4
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RESULT 15
US-08-770-379-20/c
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APPLICANT: Chang, 1
APPLICANT: Bohennk,
APPLICANT: Russo.
                                                                                                                                                                                                                                                                                                                                                               Sequence 20, Application US/08770379 Patent No. 5849564
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ZIP: 10036
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                CORRESPONDENCE APPRESS:
                                                                                                                                                                                               TITLE OF INVENTION: POLYPEPTIDES FROM KAPOSI'S SARCOMA-ASSOCIATED TITLE OF INVENTION: HERPESVIRUS, DNA ENCODING SAME AND USES THEREOF NUMBER OF SEQUENCES: 20
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TOPOLOGY: linear
MOLECULE TYPE: DNA (gen
ORIGINAL SOURCE:
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ZIP: 10036
                                                                                                                            CITY: New York
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OTHER INFORMATION: /note= "Coding sequence for the 100
OTHER INFORMATION: kd VIP1A(a) protein. This coding sequence is repeated in
OTHER INFORMATION: NO:4 and translated separately."
                                                                                                               STATE:
                                                                                                                                                STREET:
                                                                                                                                                               ADDRESSEE:
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LOCATION: 108
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Russo. James J.
                                                                                           U.S.A.
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Pred. No. 1.
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SOFTWARE: Patentin Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/770,379
FILING DATE:
CLASSIFICATION: 435
ATTORNEY/AGENT INFORMATION:
NAME: White, John P.
REGISTRATION NUMBER: 28.678
REFERENCE/DOCKET NUMBER: 52342
TELECOMMUNICATION INFORMATION:
TELEPHONE: (212) 278-0400
TELEPAX: (212) 278-0400
TELEPAX: (213) 391-0525
INFORMATION FOR SEQ ID NO: 20:
SEQUENCE CHARACTERISTICS:
LENGTH: 32207 base pairs
TYPE: nucleic acid
STRANDEDNESS: double
TOPOLOGY: linear
MOLECULE TYPE: DNA (genomic)
US-08-770-379-20
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Search completed: October 14, 1999, 00:42:50 Job time: 3426 sec
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Title:
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score greater than or equal to the score of the result being printed,
and is derived by analysis of the total score distribution.
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                           MALSLHTVFLCKEEALNLYA.....MEASEVEKLFGKALPIRKVR 1412
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US-08-328-254-6
US-08-592-126-148
US-08-082-1601-2
US-08-08-08-082-1601-2
PCT-US94-01624-2
US-08-404-531B-28
US-08-460-309-2
US-08-460-309-2
US-08-125-077-2
US-08-125-077-2
US-08-125-077-3
US-08-125-0733D-4
US-08-323-170B-2
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US-08-323-170B-2
US-08-242-932-2
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US-08-460-339-1
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01 KRFSWGWE	34 NRKNELE	0	'4 EREKSISELS	3 DEENFVRELS	'9 LVERLEKTAEE'; 	atch cal Simi 240;	SEQUENCE CHARACTERISTICS: LENGTH: 2482 amino acids TYPE: amino acid TOPOLOGY: linear MOLECULE TYPE: protein 15-08-328-234-6	ELEPHONE:	EGISTRATI	PPLICATIO TLING DAT ORNEY/AGE	LASSIFICA OR APPLIC	RENT APPL	OMPUTER: OFTWARE:	IP: 9212 IPUTER REA	TATE: San	DDRESSEE:	BER OF SE	LICANT:	NO. 5710	RESULT 1 1 US-08-328-254-6 US-08-328-254-6 ; Sequence 6, Application US/08		100 100 99.5 99.5
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QY 663 NSVVDEFNECAVSRKKCVPRKSDVGDFPVPDPSVLVQKFDMKDESGKWFITRGLNPTEDA 722 :	Qy 612 KTCTCLLKECRLELAKCISNPACAANVACLQTCNNRPDETECQIKCGDLFE 662 ::::: . :: :: Db 581 HSKSKEINQTRDRLAKLNKELASSEQNKNHINNELKRREEQLSSYEDKLFDVCGSQDF 638	Qy 552 HNLSPAHSINQNVPKGNSGCKEPKDVALMVWEKWGQFAKTAIVAIFILSVASKADAVDAL 611 b 531HTTTRTOMEMLTKDKADKDEQIRKIKSRHSDELTSLLGVFPNKKQLEDWL 580	QY 492 YVGSKLPGHKRFSWGWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGK 551	Qy 438 VRELSKEEKEILNELQMEATEVEKLEGRALDIRKLRMALAPHSNFLANHETIKY 491 :: :: :: : :	OY 382 RLEKTABEGEKLLIKEAVEIEBEVEKVEVEKVRDTEMTLFQRLLEGFKELQQDEENF 437 : : : : : : : : : : :	Query Match 1.8%; Score 135.5; DB 2; Length 1312; Best Local Similarity 19.7%; Pred. No. 0.012; Matches 124; Conservative 95; Mismatches 218; Indels 191; Gaps 24;	; OKIGINAL SOUNCE: Rad50.pro-translation of SEQ ID NO:54 ; INDTYDIAL ISOLATE: Rad50.pro-translation of SEQ ID NO:54 US-08-592-126-148) D K =	; INFORMATION FOR SEQ ID NO: 148; ; SEQUENCE CHARACTERISTICS: ; LENGTH: 1312 amino acids	四日田日	e ⊢i	COMMERCIAL OF SYSTEM: PC-DOS/MS-DOS SOFTWARE: PatentIn Release #1.0, Version #1.25 CURRENT APPLICATION DATA: APPLICATION NUMBER: US/08/592,126	06 ADABLE FO	H	OF INVENTION: FOLYPEPTIDES OF OF SEQUENCES: 151 PONDENCE ADDRESS: Dehlinger & Associates	; GENERAL INFORMATION: ; APPLICANT: Gregory Dolganov ; IIILE OF INVENTION: Transcripts Encoding Immunomodulatory	2 -126-148 -148, Appl	

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                                                   Query Match
Best Local Similarity
Matches 139; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GENERAL INFORMATION: APPLICANT: Leppla
                                                                                                                                                                                                                                                              TELEFAX: 404/688-9880 INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TITLE OF INVENTION: ANTHRAX TOXIN FUSION PROTEINS AND TITLE OF INVENTION: RELATED METHODS
NUMBER OF SEQUENCES: 12
                                                                                                                                                                                                                       SEQUENCE CHARACTERISTICS:
LENGTH: 776 amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SOFTWARE: PatentIn Release #1.0, Version #1.25 CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COMPUTER READABLE FORM: MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: Arora, Naveen APPLICANT: Singh, Yogendra
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT:
                                                                                                                                                                                                                                                                                                                     TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                           ATTORNEY/AGENT INFORMATION:
NAME: Spratt, Gwendolyn D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            756 NVNRDIQR-LKNDIEEQETLLGTIMPEEESAKVCLTDVTIMERFQMELKDVERKIAQQAA 814
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733 EENKLYGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHD---NEYLLYQDDWY--I 787
                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICATION NUMBER: FILING DATE: 19930:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COUNTRY:
                                                                                                                                                                                                                                                                                                                                         REGISTRATION NUMBER: 36, REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                  CLASSIFICATION:
                                                                                                                                                                                     TOPOLOGY:
                                                                                                                                                                                                                                                                                                    TELEPHONE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MDVLDGLKME------ATEVEKLF 941
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               KLQGIDLDRTVQQVNQEKQEKQHKLDTVSSKIELNRKLIQDQQEQIQHLKSTTNELKSEK 874
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DDWYILSSKVENSPEDYIFV--YYKGRNDAWDGYGGSVLYTRSAV-LPESIIPELQTAAQ 839
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FITQL----TDENQSCCPVCQRV----FQTEAELQEVISD--
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                                                                                                                                                                                                       1: 776 amino acids AMINO ACID
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             E: Needle & Rosenberg, P.C.
133 Carnegie Way, Suite 400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          USA
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Nichols, Peter J.
                                                 1.8%; Score 132; DB 1; Length 776; ilarity 17.2%; Pred. No. 0.0098; Conservative 117; Mismatches 254; Indels 3
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FR: 1414.057
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                                                     Indels 300;
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                                                                                                                                                                                                                                                                                                       US-08-082-849B-2
                                                                                                                                                                                                                                                                                                                       RESULT
                                                                                                                                                  GENERAL INFORMATION:
APPLICANT: Leppla, Stephen H.
APPLICANT: Klimpel, Kurt R.
APPLICANT: Arora, Naveen
APPLICANT: Singh, Yogendra
APPLICANT: Nichols, Peter J.
                                                                                                                                                                                                                                                                Sequence 2, Application US/08082849B Patent No. 5677274
                                                                          CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           848 FIKTDNTCG-------PEPPLVERLEKKVEEGERTIIK-----
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1165 KWYITSGLNPTEUAFDCQLHEFHTEGDNKLV--GNISWRIKTLDSGFFTRSAVQKFVQDP 1222
                                                                                                                                                                                    APPLICANT: NICHOLS, Peter J.
TITLE OF INVENTIN: Anthrax Toxin Fusion Proteins and TITLE OF INVENTIN: Related Methods
NUMBER OF SEQUENCES: 35
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1110 QIKCGDLFENSVVDE--FNECAVSRKKCVPRK---SDLGEFPAPDPSVLVQNFNISDFNG 1164
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ADDRESSEE: Tornsend and Townsend and Crew LLP STREET: Two Embárcadero Center, Eighth Floor CITY: San Francisco
STATE: California
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INFORMATION FOR SEQ ID NO:
                                    1165 KWYITSGLNPTFDAFDCQLHEFHTEGDNKLV--GNISWRIKTLDSGFFTRSAVQKFVQDP 1222
                                                                                                                                                                                                                                                                                              1007 GRSSRPL------SAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKLVG 1049
                                                                                                                                                                                                           1050 VLACAFLIVPSADAVDALKTCACLLKGCRIELAKCIANPACAANVACLQTCNNRPDETEC 1109
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TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 576-0200
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ATTORNEY/AGENT INFORMATION:
NAME: Weber, Kenneth A.
REGISTRATION NUMBER: 31,677
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SOFTWARE: Patentin Release #1.0, Version #1.30 CURRENT APPLICATION DATA:
    511 AGYLENG---
                                                                                                                                                                                                                                                                   397
                                                                                                                                                                                                                                                                                                                                                       357
                                                                                                                                                                                                                                                                                                                                                                                    951 MAVATHCFTSPCHDRIRFFSSDDGIGRLGITRKRINGTFLLKILPPIQSAD----LRTTG 1006
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CLASSIFICATION: 514
PRIOR APPLICATION DATA:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                      908 ---LQRDEENFLRELSKEEMDVLDGLKMEATEV----EKLEGRALPI------RKL 950
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    177 IKNASDSDGQDLLFTNQLKEHPTDFSVEFLEQNSNEVQEVFAKAFAYYIEPQHRDVLQLY 236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 237 APEAFNYMDKFNEQEINLSLEELKDQRMLSRYEKWEKIKQHYQHWSDSLSEEGRGLLKKL 296
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           72 EMYKAIGG---KIYIVDGDITKHISLEALSEDKKKIKDIYGKDALLHEHYVYAKEGYEPV 128
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ZIP: 941
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICATION NUMBER: US 0 FILING DATE: 12-FEB-1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICATION NUMBER:
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                                                                                                                          QIKCGDLFENSVVDE--FNECAVSRKKCVPRK---SDLGEFPAPDPSVLVQNFNISDFNG 1164
                                                                                                                                                                           ------GADLVDST-----
                                                                                                                                                                                                                                                        GLIDSPSINLDVRKQYKRDIQNIDALLHQSIGSTLYNKIYLYENMNINNLTATL----- 451
                                                                                                                                                                                                                                                                                                                                              L------NRIQVDSSNP-----LSEK--EKEFLKKLKLDIQPYDINQRLQDTG 396
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94111-3834
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                                                                                                                                                                                                                                                                                                                                                                   ATTORNEY/AGENT INFORMATION:
NAME: Weber, Kenneth A.
REGISTRATION NUMBER: 31,677
REFERENCE/DOCKET NUMBER: 1528
TELECOMMUNICATION INFORMATION:
TELEPAN: (415) 543-5043
INFORMATION FOR SEQ. ID NO: 2:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PCT-US94-01624-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT
                                                                                                                                                     Matches 139;
                                                                                                                                                                  Query Match
Best Local Similarity
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                                                                                                                                                                                                                                                                                                                                   SEQUENCE CHARACTERISTICS:
LENGTH: 776 amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT: Klimpel, Kurt R.
APPLICANT: Arora, Naveen
APPLICANT: Singh, Yogendra
APPLICANT: Nichols, Peter J.
TITLE OF INVENTION: ANTHRAX TOXIN FUSION PROTEINS AND
TITLE OF INVENTION: RELATED METHODS
                                                                                                                                                                                                                                                                       MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ADDRESSE: TOWNSEND and TOWNSEND KHOURIE and CREW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    COMPUTER READABLE FORM:
788 LSSKVENSPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDFNT 847
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT: Leppla, Stephen H.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1380 ----LSKEEME-----FLDEIKMEASEV 1398
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                                                                                                  733 EENKLYGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHD---NEYLLYQDDWY--I 787
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1281 SVLPNSIIPELEKAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGE-RIIVKEV-- 1338
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    637 PNIAEQYTHQDEIYEQVHSKGLYVPESRSILLHGPSKGV-ELRNDSEGFIHEFGHAVDDY 695
                                                         72 EMYKAIGG---KIYIVDGDITKHISLEALSEDKKKIKDIYGKDALLHEHYVYAKEGYEPV 128
                                                                                                                                                                                                                                                                                                           TYPE: amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ZIP:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STREET:
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                                                                                                                                                                                                                                                                                              TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICATION NUMBER: FILING DATE: June
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MEDIUM TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ----IIKQSEKEYIRI-DAKVVPKSKIDTKIQE----AQLNINQEWNKALGLPKYTKLIT 584
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                                                                                                                                                                                                                                                                                                                                     776 amino acids
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                                                                                                                                               Conservative 117; Mismatches 254; Indels 300;
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                                                                                                                                                                                                                                                                                              linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           June 25,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Floppy disk
                                                                                                                                                              1.8%; Score 132; DB 3; Length 776; 17.2%; Pred. No. 0.0098;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1993
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RESULT 6
US-08-404-531B-6
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                                                                                                                                                                                                                                                                                                 Patent No.
                                                                                                                                                                                                                                                                                                                       APPLICANT: Joseph Bryan, Lydia Aguilar Bryan, Daniel Nelson, Pameia APPLICANT: Thomas, Gilbert Cote, and Robert Gagel TITLE OF INVENTION: Sequence Encoding Mammalian Sulfonylurea Receptor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1007
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                                                                 ZIP: 19103
COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                      NUMBER OF SEQUENCES: 4
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1110 QIKCGDLFENSVVDE--FNECAVSRKKCVPRK---SDLGEFPAPDPSVLVQNFNISDFNG 1164
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                                                                                                                                                                             ADDRESSEE: Woodcock Washburn Kurtz Mackiewicz ADDRESSEE: No. 5863724ris STREET: One Liberty Place 46th. Floor
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                        STREET: One Libert
CITY: Philadelphia
                                                                                                                 COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 L---VIQSSEDYVENTEKALN-------VYYEIGKILSRDILSKINQPYQKFLDVLNT 176
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                                                                                                                 USA
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                                                                      Sequence 28, Application US/08404531B Patent No. 5863724
                                                     GENERAL INFORMATION:
       APPLICANT:
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US-08-404-531B-6
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Best Local
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SOFTWARE: PatentIn Release #1.0, Version CURRENT APPLICATION DATA: APPLICATION NUMBER: US/08/404,531B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TELECOMMUNICATION INFORMATION: TELEPHONE: 215-568-3100
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE CHARACTERISTICS:
LENGTH: 1581 amino acids
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                                                                                                                                                                                                                                                                                                                                                                                                                                        739
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          637 KYQAVPLKVVNKKRPAREEVRDLLGPLQ----
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      480 KLSQAQRTTL------EYSNERLKQT---NEMLRGIKLLKLYAWENIFCSRVEKTRRK 528
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             868 KVEEGERTIIKEVEEIEEEVEKVRDKEVTLESKLFEGFK--ELQRDEENFLRELSKEEMD 925
                                                                                                                                                                                                                                                                                                                            794
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             979
947 RK---APEPS--QGLPRAMSSRDGLLLDEDEEEEEAAESE 981
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TYPE: amino acid
TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NAME: Beardell, Lori
REGISTRATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GITRKRINGTF1L-----KILPPIQ-----SADLRTTGGRSSRPLSAFRSGFSKG
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FFTWTPDGIPTLSNITIRIPRGQLTMIVGQVGCGKSSLLLATLG-----EMQKVSGAVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              IFDIVPL-----PSKNELKELTAPLLLKLVGVLACAFLIVPSADAVDALKTCACLLKG 1076
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SLFHILVTPLFLLSSVVRSTVKALVSVQKLSEFLSSAEIREEQCAPREPAPQGQA----G 636
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EMTSLRAFAVYTSISIFMNTÄIPIAAVLITFV-----GHVSFFKESDFSPSVAFASL 580
                                                   TDNTCGPEPALVERIEKTVEEGERIIVKEVEEIEEEVEKE 1347
                                                                                                            DGTIQREGTLKDFQRSECQLFEHW-----KTLMNRQDQELEK--
                                                                                                                                                               KIENKPEDYIFYTYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELEKAAKSIGRDFSTFIR 1307
                                                                                                                                                                                                                                                                                                                            NKQRYKMVIEACSLQPDIDIL------PHGDQTQIGERGINLSTGGQRPDQCRPEPST
                                                                                                                                                                                                                                                                                                                                                                                  NGKWY----ITSGLNPTFDAFDCQLHEFHTEGDNKLVGNISWRIKT---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ENSVVDEFNECAVSRKKCVPRKSDLGEFPAPDP------SVLVQNFNI-SDF 1162
                                                                                                                                                                                                                     STPMIVFLDDPFSALDVHLSDHLMQAGILELLRDDKRTVVLVTHKLQYLPHA-DWIIAMK 904
                                                                                                                                                                                                                                                                     -----LDSGF------FTRSAVQKFVQDPNQPGVLYNHDNEYLHYQDDWYILSS 1247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1.7%;
Similarity 18.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative 72; Mismatches 221; Indels 178;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       15-MAR-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        34,293
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -RIELAKCIANPACAANVACLQTCNNRPDETECQIKCGDLF 1117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    BYLR-0003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 124; DB Pred. No. 0.15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ----RLTPSTDG-DADNFCVQIIGG 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB 2; Length 1581;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             #1.25
                                                                                                                                                                                                                                                                                                                                                                                       ---- 1205
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Joseph Bryan, Lydia Aguilar Bryan, Daniel Thomas, Gilbert Cote, and Robert Gagel

Nelson,

5863724

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INFORMATION FOR SEQ ID NO: 28:
1248 KIENKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELEKAAKSIGRDFSTFIR 1307
                                                                                                                                                                                                1163 NGKWY----ITSGLNPTFDAFDCQLHEFHTEGDNKLVGNISWRIKT------ 1205
                                                                                                                                                                                                                                                                                                 1118 ENSVVDEFNECAVSRKKCVPRKSDLGEFPAPDP------SVLVQNFNI-SDF 1162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1024 IFDIVPL------PSKNELKELTAPLLLKLVGVLACAFLIVPSADAVDALKTCACLLKG 1076
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REGISTRATION NUMBER: 34,293
REFERENCE/DOCKET NUMBER: BY:
TELECOMMUNICATION INFORMATION:
TELEPHONE: 215-568-3100
                                                                                                                                               794 NKQRYKMVIEACSLQPDIDIL------PHGDQTQIGERGINLSTGGQRPDQCRPEPST 845
                                                                                                                                                                                                                                               739 WNSLPD-----SEGRRPQQPRAGDSGRFGCQEQRPCGYASQKPWLLNATVEENITFESPF 793
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE CHARACTERISTICS:
LENGTH: 1498 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ATTORNEY/AGENT INFORMATION:
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                                                 846 STPMIVFLDDPFSALDVHLSDHLMQAGILELLRDDKRTVVLVTHKLQYLPHA-DWIIAMK 904
                                                                                                                                                                                                                                                                                                                                                                                                                                                637 KYQAVPLKVVNRKRPAREEVRDLLGPLQ-------RLTPSTDG-DADNFCVQIIGG 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                685 FFTWTPDGIPTLSNITIRIPRGQLTMIVGQVGCGKSSLLLATLG-----EMQKVSGAVF 738
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                979 GITRKRINGTFLL------KILPPIQ------SADLRTTGGRSSRPLSAFRSGFSKG 1023
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 529 EMTSLRAFAVYTSISIFMNTAIPIAAVLITFV-----GHVSFFKESDFSPSVAFASL 580
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                926 VLDGLKNEA--TEVEKLFGRALPIRKLMAVATHCFTSPCHDRIRFFSSDD-----GIGRL 978
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 480 KLSQAQRTTL-----EYSNERLKQT---NEMLRGIKLLKLYAWENIFCSRVEKTRRK 528
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                868 KVEEGERTIIKEVEEIEEEVEKVRDKEVTLFSKLFEGFK--ELQRDEENFLRELSKEEMD 925
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 581 SLFHILVTPLFLLSSVVRSTVKALVSVQKLSEFLSSAEIREEQCAPREPAPQGQA----G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STREET: One L.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Match 1.7%; Score 124; DB 2; Length 1498; Local Similarity 18.8%; Pred. No. 0.14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TELEPHONE: 215 C. TELEPHONE: 215-568-3439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          OPERATING SYSTEM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ADDRESSEE: Woodcock Washburn Kurtz Mackiewicz ADDRESSEE: No. 5863724ris
                                                                                                -----LDSGF-----FTRSAVQKFVQDPNQPGVLYNHDNEYLHYQDDWYILSS 1247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Beardell, Lori Y.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     One Liberty Place 46th. Floor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  E: Floppy disk
IBM PC compatible
SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       15-MAR-1995
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        49
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Release #1.0, Version #1.25
                                                                                                                                                                                                                                                                                                                                                                                               ---RIELAKCIANPACAANVACLQTCNNRPDETECQIKCGDLF 1117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US/08/404,531B
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                                                                      Qγ
                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                             ; TOPOLOGY: linear
; MOLECULE TYPE: protein
US-08-460-309-2
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US-08-460-309-2
                                                                                                                                                                                                           Query Match 1.5%; Score 115.5; DB 2; Length 1130; Best Local Similarity, 20.0%; Pred. No. 0.46; Matches 163; Conservative 96; Mismatches 262; Indels 293; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 2, Application US/08460309 Patent No. 5837496
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TELEFAX: (619) 535-89
INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FILING DATE: 27-JUL-1992
ATTORNEY/AGENT INFORMATION:
NAME: Campbell, Cathryn
                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE CHARACTERISTICS:
LENGTH: 1130 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REGISTRATION NUMBER: 31,815
REFERENCE/DOCKET NUMBER: P-
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FILING DATE: 30-JAN-PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FILING DATE: 21-SEP-PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SOFTWARE: PÄtentin Rel
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US
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MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT: Engvall, Eva
APPLICANT: Leivo, Ilmo
APPLICANT: Leivo, Ilmo
TITLE OF INVENTION: Nucleic Acids Encoding Merosin, Merosin
TITLE OF INVENTION: Fragments and Uses Thereof
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CORRESPONDENCE ADDRESS:
ADDRESSEE: Campbell and Flores
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRIOR APPLICATION DATA:
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                                                           352 ----LOKAAKSVGRDFNNFITTDNSCGPEPPLVERLEKTAEEGEKLLIKEAVEIEEEVEK 407
                                                                                                                                                              294 NEFLHYQDDWYILSSQIENKPDDYIFVYYRGRNDAWDGYGGSVIYTRSPTLPE-SIIPN- 352
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICATION NUMBER: US 08 FILING DATE: 22-SEP-1993 APPLICATION NUMBER: US PORTION NUMBER: US PORTION DATE: 21-SEP-1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  947 RK---APEPS--QGLPRAMSSRDGLLLDEDEEEEEAAESE 981
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               50 TAAKLQ-AVKDKARQAND--TAKDVLAQITELHQNLDGLKKNYNKL--ADSVAKTNAVVK 104
                                                                                                                                                                                                                                                                                                                                                                                                                      TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TELEPHONE:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICATION NUMBER: US 07/472,319
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FILING DATE:
                                                                                                                  6 NDVKENEDHLNGLKTRIENA------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STATE:
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California
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (619)
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619) 535-8949
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 30-JAN-1990
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P-1993
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US-08-404-531B-28

TOPOLOGY:

FILING DATE: 1 CLASSIFICATION:

COMPUTER:

COUNTRY:

USA

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NAME:

Query Match

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US-08-460-309-4
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                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 4, Application US/08460309 Patent No. 5837496
                                                                                                                                                                                                                                                                                                                                                                          GENERAL INFORMATION:
APPLICANT: Engvall, Eva
APPLICANT: Leivo, Ilmo
                                                                                                                                                                                                                                       CORRESPONDENCE ADDRESS:
ADDRESSEE: Campbell and Flores
STREET: 4370 La Jolla Village Drive,
                                                            COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: LEM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                  SOFTWARE: PatentIn Release #1.0, Version #1.25 CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                   TITLE OF INVENTION: Nucleic Acids TITLE OF INVENTION: Fragments and
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APPLICATION NUMBER:
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Best Local Similarity 20.0%;
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INFORMATION FOR SEQ ID NO: 4:
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PRIOR APPLICATION DATA:
APPLICATION NUMBER: '
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LENGTH: 3111 amino aci
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762 -VQDPKYPGILYNHDNEYLLYQDDWYILSSKVENSPEDYIFVYYKGRNDAWDGYGGSVLY 820
                                                                                                                                                                                                                                                                                                       660 LFENSVVDEFNECAVSRKKCVPRKSD-------VGDFPV---PDPSVLVQKF-- 702
                                                                                                    713 TRGLNPTFDAFUCQLHEFHTEENKLV----GNLSWRIRTPD----GGFFT-RSAVQKF--
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CLASSIFICATION: 435
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                                                  QKQANISIVDIDT-----NQEENIATSSSGNNFGLDLKADDKIYFGGLPTLRNLSMKARP 2486
                                                                                                                                                                                                                                                   -----;CTVS-----PQVEDSEGTIQFDGEGYALVSRPIRWYPNISTVMFKFRT 2371
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27-JUL-1992
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Pred. No. 2.4;
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Query Match 1.5%; Score 115.5; DB 2; Length 1130; Best Local Similarity 20.0%; pred. No. 0.46; Matches 163; Conservative 96; Mismatches 262; Indels 293; Gaps 43; Qy 294 NEFLHYQDDWYILSSQIENKPDDYIFVYYRGRNDAWDGYGGSVIYTRSPTLPE-SIIPN- 352	: REFERENCE/DOCKET NUMBER: P-LA 9721 : TELECOMMUNICATION INFORMATION: TELEPHONE: (619) 535-9001 : INFORMATION: G619) 535-8949 : INFORMATION: PGR SEQ ID NO: 2: SEQUENCE CHARACTERISTICS: LENGTH: 1130 amino acids TYPE: amino acid TOPOLOGY: linear MOLECULE TYPE: protein US-08-125-077-2	US PCT/US 1994 US 07/472, 1990 US 07/919, 1992 109: 109: 1790 1790 1790 1790 1790 1790 1790 1790	STATE: California COUNTRY: USA COUNTRY: USA ZIP: 92122 COMPUTER READABLE FORM: MEDIUM TYPE: Floppy disk COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS SOFTWARE: Patentin Release #1.0, Version #1.25 CURRENT APPLICATION DATA: APPLICATION WHERE: US/08/125,077 FILING DATE: 22-SEP-1993 CLASSIFICATION: 435 PRIOR APPLICATION: 435 PRIOR APPLICATION: DATA:	RESULT 10 US-08-125-077-2 Sequence 2, Application US/08125077 Patent No. 5872231 Patent No. 5872231 5840863 GENERAL INFORMATION: APPLICANT: Leivo, Ilmo ITILE OF INVENTION: Nucleic Acids Encoding Merosin, Merosin FITLE OF INVENTION: Fragments and Uses Thereof NUMBER OF SEQUENCES: 23 CORRESPONDENCE ADDRESS: ADDRESSE: Campbell and Flores STREET: 4370 La Jolla Village Drive, Suite 700	Db 2487 EVNIKKYSGCLKDIEISRIPYNILSSPDYVGVTKGCSLENVY 2528 Qy 821 TRSAVLPESIIPELQTAAQKVGRDENTEIKTDNTCG
CORRESONDENCES: 23 CORRESONDENCES ADDRESS: ADDRESSEE: Campbell and Flores STREET: 4370 La Jolla Village Drive, Suite 700 CITY: San Diego STATE: California COUNTRY: USA	77-4 4, Application U 5872231 584086 INFORMATION: BIT LEIVO, ILE DE INVENTION: F INVENTION: F SECURITION: OF SE	Oy 821 TRSAVLPESIIPELQTAAQXVGRDENTEIKTDNTCG	702DMKDF 391 FSSSALLMYLATRDLRDF 713 TRGLNPTFDAFDCQLHEF 451 QKQANISIVDIDT 762 -VQDPKYPGILYNHDNEY 1 1 1 1 1 1 1 1 1 1	Qy 501 KRFSWGW	Db 6 NDVKENEDHLNGLKTRIENA

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INFORMATION FOR SEQ ID NO: 4:
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OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
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REFERENCE/DOCKET NUMBER: p-
TELECOMMUNICATION INFORMATION
TELEPHONE: (619) 535-9001
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COMPUTER READABLE FORM:
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2372 FSSSALLMYLATRDLRDFMSVELTDGHIKVSYDLGSGMASVVSNQNHNDGKWKSFTLSRI 2431
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2086 DPSKNKIIADADATVKNLEQEADRLIDKLKPIKELEDNLKKNIS-EIKELINQARKQANS 2144
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2031 TAAKLQ-AVKDKARQAND--TAKDVLAQITELHQNLDGLKKNYNKL--ADSVAKTNAVVK 2085
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               459 VE---KLFGRALPIRKLRMALAPHSNFLANHET----IKYYVGS------KLPGH 500
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  294 NEFLHYQDDWYILSSQIENKPDDYIFVYYRGRNDAWDGYGGSVIYTRSPTLPE-SIIPN- 352
                                                                                                                                              660 LFENSVVDEFNECAVSRKKCVPRKSD------
                                                                                                                                                                                                                                            606 DAVDALKTCTCLLKECRLELAKCI ----- SNPACAANVACLQTCNNRPDETECQIKCGD 659
                                                                                                                                                                                                                                                                                                                                               546 LFSHGKHNLSPAHSINQNVPKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKA 605
                                                                                                                                                                                                                                                                                                                                                                                                                                               501 KRFSWGW-------EDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQ 545
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICATION NUMBER: US PCT/US 94/10730 FILING DATE: 21-SEP-1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICATION NUMBER: US/0 FILING DATE: 22-SEP-1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Local Similarity
les 163; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MEDIUM TYPE:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ----LQKAAKSVGRDFNNFITTDNSCGPEPPLVERLEKTAEEGEKLLIKEAVEIEEEVEK 407
                                                                                                                                                                                                KKADAVRVIT---
                                                                                                                                                                                                                                                                                                IVPSTHHSTSP------PGYTILDV-----DANAMLFVGGLTGKL 2289
                                                                                                                                                                                                                                                                                                                                                                                                VSFLWDVGSGVGRVEYPDLTIDDSYWYRIVASRTGRNGTI-----SVR---ALDGPKAS 2255
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                IKVSVSSGGDCIRTYKPEIKKGSYNNIVVNVKTAVADNLLFYLGSAKFIDFLAIEMRKGK 2204
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EVEK---VRDTEMTL-----FQRLLEGFKELQQDEENFVRELSKEEKEILNELQMEATE 458
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Campbell, Cathryn A.
TRATION NUMBER: 31,815
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1.5%; Score 115.5; llarity 20.0%; Pred. No. 2.4; Conservative 96; Mismatches
                                                                                             --GCTVS-----PQVEDSEGTIQFDGEGYALVSRPIRWYPNISTVMFKFRT 2371
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Floppy disk
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                                                                                                                                              -VGDFPV---PDPSVLVQKF-- 702
                                                                                                                                                                                                --- IGLWNFREKEGDCK----
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US-08-568-459A-4
                                                                                                                                                                        TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELEPHONE: (619) 235-8550
TELEPAX: (619) 235-0176
INFORMATION FOR SED ID NO: 4:
SEQUENCE CHARACTERISTICS:
LENGTH: 1435 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GENERAL INFORMATION:
APPLICANT: Sim, Ki
APPLICANT: Chicais
APPLICANT: Milicr,
APPLICANT: Peterso
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                                        MOLECULE TYPE: protein HYPOTHETICAL: NO ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS SOTTWARE: Patantin Release #1.0, CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COMPUTER READABLE FORM: MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NUMBER OF SEQUENCES: 3
CORRESPONDENCE ADDRESS:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TITLE OF INVENTION: BINDING DOMAINS FROM PLASMODIUM VIVAX
TITLE OF INVENTION: AND PLASMODIUM FALCIPARUM ERYTHROCYTE BINDING PROTEINS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2645 RYMQNLTVE------QPIEVKKLFVGGAPP 2668
                                                                                                                                                                                                                                                                                                                                                                                 ATTORNEY/AGENT INFORMATION:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         914 NFLRELSKEEMDVLDGLKMEATEVEKLF-GRALP 946
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        821 TRSAVLPESII; ELQTAAQKVGRDFNTFIKTDNTCG------PEPPLVE------ 864
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          713 TRGLNPTFDAFTCQLHEFHTEENKLV----GNLSWRIRTPD-----GGFFT-RSAVQKF--
                                                                                                        TYPE: amino acid
STRANDEDNESS: sin
TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICATION NUMBER: FILING DATE: 07-DEC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STATE:
                                                                                                                                                                                                                                                                                                                                       NAME: Israelsen, Ned REGISTRATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                            CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STREET:
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                       ORGANISM:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TVS--FPKPGrVELSPVPIDVGTEINLSFSTKNESGIILLGSGGTPAPPRRKRRQTGQAY 2586
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ------RLFKKVEEGERTIIKEVEEIEEEVEKVRD-KEVTLFSKLFEGFKELQRDE-E 913
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: California
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Chitcis, Chetan
Miller, Louis H
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SD
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Wellems, Thoma
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                  Plasmodium falciparum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Knobbe Martens Olson & Bear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   floppy disk
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                                                                                                                             single
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                                                                                                                                                                                                                                                                                                                                       29,655
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RESULT 13
US-08-353-700-1
           GENERAL INFORMATION:
APPLICANT: YEN, TIMOT
APPLICANT: RATTNER, C
TITLE OF INVENTION: T
TITLE OF INVENTION: T
                                                                                                                                               Sequence 1, Application US/08353700 Patent No. 5599919
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Matches 171; Conservative 122;
                                                                                                                                                                                                                                                                                                                                                       1305 FIRTUNTCGPEPALVERIEKTVE------EGERIIVKEVEEI 1340
                                                                                                                                                                                                                                                                                                          1045 -----NTPGP----LDNTSEETTERISNNEYKVNEREDERTLTKEYEDI 1084
                                                                                                                                                                                                                                                                                                                                                                                                                     1004 VNMNVEKELKDTL-----ENPS
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         378 HTLSKEYE-TQKVPKEN----------AENYLIKI----SENKNDAKVSL 412
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LSSKIENKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELEKAAKSIGRDFST 1304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DEDEKGADEERHSTSES----LSSPEEKMLTD-NEGGNSLNHEEVKEHTSNSDNVQQSGGI 1003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SINNGDDSGSGSATVSESSSSNTGLSIDDDRNGDTFVRTQDTANTEDV----IRKENADK 947
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CVPRKSDLGEFPAPDPSVLVQNFNIS---DFNGKWYI-TSGLNPTFDAFDCQLHEFHTEG 1190
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VYLKKYSEKCSNLNFEDEFKEELHSDYK------NKCTMCP----- 744
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SSPNDNINVTEQGDNISGVNSKPLSDDVRPDKKELEDQNSDESEETVVNH-----ISKSP 891
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   KGNEQKERDDDSLSKI-----SVSPENSRPETDAKDTSNLLKLKGDVDISMPKAVIG 836
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                                                                                            TIMOTHY J.
JEROME B.
NUCLEIC ACID ENCODING A
TRANSIENTLY-EXPRESSED KINETOCHORE PROTEIN,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Pred. No. 0.75;
2; Mismatches
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Best Local Similarity 17.7%; Pred. No. 4.6; Matches 219; Conservative 178.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TELEFAX: (215): 563-4044
INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TOPOLOGY: linear MOLECULE TYPE: pro HYPOTHETICAL: NO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ANTI-SENSE: NO ORIGINAL SOURCE:
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NAME: REED, JANET E.
REGISTRATION NUMBER: 36,252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/353,700
FILLING DATE: 09-DEC-1994
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COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy
     1160 MKTKHECQNLESEPI----RN---
                                                                                                        1115 TDNQNNSKSEAGGLKQEIMTLKE---EQNKMQKEVND------LLQENEQLM-----KV
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CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                           TELECOMMUNICATION INFORMATION: TELEPHONE: (215) 563-4100
                                                                                                                                                          728 HEFHTEENKLYGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLYQDDWYI 787
                                                                                                                                                                                                                                                                     668 EFNECAVSRKKCVPRKSDVGDFPVPDPSVLVQKFDMKDFSGKWFITRGLNPTFDAFDCQL 727
                                                                                                                                                                                                                                                                                                                                                                             608 VDALKTCTCLLK.ECRLELAKCISNPACAANVACLQTCNNRPDETECQIKCGDLFENSVVD 667
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   999 SFANYI--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              488 TIKYYVGSKLPGHKRESWGWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLF 547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                943 ELQLLSET----LSLEKKEMSSIISLNKREIEELTQENGTLKEINASLNQEKMNLIQKSE 998
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CTTY: PHILADELPHIA
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                                                     LSSKVE--NSPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRD- 845
                                                                                                                                                                                                                SHGKHNLSPAHSINQNVPKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADA 607
                                                                                                                                                                                                                                                                                                                                                                                                                                --------EKSISELSDQYKQEKLILLQRCEETGN-----AYEDLSQKYKA-A 1046
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1601 MARKET STREET, SUITE 720
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PCT-US95-16216-1
                                                                                                                                                                                                                                                                                                                                                              Sequence 1, Application PC/TUS9516216 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                             APPLICANT:
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
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                                                                                                                                                                                                                                                                TITLE OF INVENTION:
                                                                                                                                                                                                                                          NUMBER OF SEQUENCES:
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                                                                          COUNTRY: USA
ZIP: 19103-2307
                                                                                                                                                                     STREET:
                                                                                                                                                                                           ADDRESSEE:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SQEISGLKDCEIDAEEKYISGPHELSTSQNDNAHLQCSLQTTMNKLNELEKIC-EILQAE 1313
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                                                                                                                                               Philadelphia
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                                                                                                                                                                                                                                                      Yen, Timothy J.

Rattner, Jerome B.

NVENTION: Nucleic Acid Encoding a Transiently

NVENTION: Expressed Kinetochore Protein, and I
                                                                                                                                                                  E: Dann, Dorfman, Herrell and Skillman
1601 Market Street Suite 720
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; ANTI-SENSE: 1
PCT-US95-16216-1
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TELECOMMUNICATION: INFORMATION:
TELEPHONE: (215) 563-4100
TELEFAX: (215) 563-4044
INFORMATION FOR SEQ ID NO: 1:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MOLECULE TYPE:
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949 KLMAVA-----THCFTS-----PCHDRIRFFSSDDGIGRLGITRKRINGTFLLKI 993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     943
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              381 ERLEKTAEE--GEKLLIKEAVEIEEEVEKEVEKVRD---TEMTLFQRLL------EGFK 428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      883 QRISKLQEDTSAHQNVVAETLSALENKEKELQLLNDKVETEQAETQELKKSNHLLEDSLK 942
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Local Similarity nes 219; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICATION NUMBER: US 08/353,700 FILING DATE: 09-DEC-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICATION NUMBER: FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NAME:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LENGTH:
                                            SQEISGLKDCEII1AEEKYISGPHELSTSQNDNAHLQCSLQTTMNKLNELEKIC-EILQAE 1313
                                                                                    SKLFEGFKELQRD-EENFL---RELSKEEMD-----VLDGLKMEATEVEKLFGRALPIR
                                                                                                                                YNAQLVQLE-----AMLRNKELKLQESE----KEKECLQHELQTIRGDLETSNLQDMQ 1254
                                                                                                                                                                        FNT-FIXTDNTCGPEPPLVERLEXKVEEGERTIIXEVEEIEEEVEKVR-DKEVT----LF
                                                                                                                                                                                                                  MKTKHECQNLESEPI-----RN-----SVKERESERNQCNFKPQMDLEVKEISLDS
                                                                                                                                                                                                                                                          LSSKVE--NSPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRD- 845
                                                                                                                                                                                                                                                                                                    TDNQNNSKSEAG:3LKQEIMTLKE---EQNKMQKEVND-----LLQENEQLM-----KV
                                                                                                                                                                                                                                                                                                                                              HEFHTEENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLYQDDWYI 787
                                                                                                                                                                                                                                                                                                                                                                                      FLTKLAFAEER----
                                                                                                                                                                                                                                                                                                                                                                                                                              EFNECAVSRKKCVPRKSDVGDFPVPDPSVLVQKFDMKDFSGKWFITRGLNPTFDAFDCQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               QEKNSKLECLLNE - - - -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           VDALKTCTCLLKECRLELAKCISNPACAANVACLQTCNNRPDETECQIKCGDLFENSVVD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SHGKHNLSPAHSINQNVPKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADA 607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SFANYI------DER-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TIKYYVGSKLPGHKRFSWGWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLF 547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ELQLLSET - - - · · LSLEKKEMSSIISLNKREIEELTQENGTLKEINASLNQEKMNLIQKSE
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             amino acid
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              3248 amino acids
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protein
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EKSISELSDQYKQEKLILLQRCEETGN-----AYEDLSQKYKA-A 1046
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1.5%; Score 112.5; 1
17.7%; Pred. No. 4.6;
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                                                                                                                                                                                                                                                                                                                                                                                        -NQNLMLE-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            -----CTSLCENRKNELE-QLK--EAFAKEHQE 1084
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 3;
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                                                                                                                                                                                                                                                                                                                                                                                        ·LETYQQALRSEM 1114
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US-08-603-753D-4
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  COMPUTER READABLE FORM:
COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette, 3.50 inch, 800 kB storage
COMPUTER: IBM PC/XT/AT compatible
COMPUTER: Windows 3.1
                                                                                                                                                                                                                                                                                                                       APPLICANT: THOMPSON, MARILIN E.

APPLICANT: THOMPSON, MARILIN E.

TITLE OF INVENTION: CHARACTERIZED BRCA1 AND BRCA2

TITLE OF INVENTION: CHARACTERIZED BRCA1 AND BRCA2 PROTEINS.
                                                                                                                                                                                                                                                                                                    CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1864 DIHNLQLRVKETSNENLRLLHVIEDRDRKVESLINE 1899
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1372 DEENE --- VRELSKEEMEFLDEIKMEASEVEKLFGK 1404
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1806 TETGAVKPTGECSGEQSPDTNYEPPGEDKT--QGSSECISELSFSGPNALVPMDFLGNQE 1863
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1748 S--RSLLGIDTEDAIQGRNESCDISKEHTSETTERTPKHDVHQICDKDAQQDLNLDIEKI 1805
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1304 TFIRTDNTCGPEPALVERIEK-----TVEEGERIIVKEVEEI-----EEEVEKEVEKV 1351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1688 RQELDCLRKQYLSENEQWQQKLTSVTLEMESKLAAEKKQTEQLSLELEVARLQLQGLDLS 1747
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1635 KETPSAPAKGVEELESLCEVYRQSLEKLEEKMESQGIMKNKEIQELE-----QLLSS--E
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1575 SCVPDSSSLSSLGDSSFYRALLEQTGDMSLLSNLEGVVSANQCSVDEVFCSSLQEENLTR 1634
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1179 F------DCQLHEFHTE--GDNKLVGNISWRIK----TLDSGFFT------ 1212
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1518 ANQCSVDEVFCSSLQTYVDSLKAEN---LVLSTNLRNFQGDLVKEMQLGLEEGLVPSLSS 1574
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1125 FNECAVSRKKCVPRKSDLGEFPAPDPSVLVQNFNISDFNG------KWYITSGLNPTFDA 1178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1460 LVKEMQLGLEEGLVPSLSSSCVPDSSSLSSLGDSSFYRALLEQTGDMSLLSNLEGAV--S 1517
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1400 VQMHFAELQEKFLSLQSEHKILHDQHCQMSSKMSELQTYVDSLKAENLVLSTNLRNFQGD 1459
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1048 VGV----LACAFLIVPS----- 1088
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                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT:
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                                                                                                                             COUNTRY: UZIP: 27707
                                                                                                                                                                                                                             ADDRESSEE: ARLES A. TAYLOR, JR. STREET: SUITE 1401, UNIVERSITY TOWER, STREET: EOULEVARD
                                                                                                                                                                          STATE: NORTH CAROLINA
                                                                                                                                                                                                     DURHAM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  HOLT, JEFFREY T.
JENSEN, ROY A.
PAGE, DAVID L.
KING, MARY-CLAIRE
                                                                                                                                                                                                                                                                                                                                                                                                                               SZABO, CSILLA I.
JETTON, THOMAS L.
ROBINSON-BENION, CHERYL L.
THOMPSON, MARILYN E.
WORD PERFECT 6.1 and ASCII
                                                                                                                                                       USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ------RSAVQKFVQDPNQPGVLYNHDNEYLHYQDDWYILSSKIE 1250
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      3100 TOWER
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Matches 275; Conservative 212; Mismatches 576;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PUBLICATION INFORMATION:
AUTHORS: Wooster, R. et al
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                REFERENCE/DOCKET NUMBER: 12
TELECOMMUNICATION INFORMATION:
TELEPHONE: (919) 493-8000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ANTI-SENSE: no ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         HYPOTHETICAL:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FILING DATE: 17 JAN 1995 ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRIOR APPLICATION DATA: 0.S. 08/373,799
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MOLECULE TYPE:
                  223 DFSGKWYI----TSGLNPTFDAFDCQL-----HEFHMENDKLVGNLTWRIKTLDG
                                                                     695 KEKLQLFITPEAUSLSCLQEGQCENDPKS--KKVSDIKEEVLAAACHPVQHSKVE-YSDT 751
                                                                                                                                                                       645 RSCS-----QNDSEEPTLSLTSSFGTILRKCSRNETCSNNTVISQDLDYK--EAKCN 694
                                                                                                                                                                                                                          113 LVCTFVIVPRVDAVDALKTCACLLKECRIELAKCIANPSCAANVACLQTCNNRPDETECQ 172
                                                                                                                                                                                                                                                                          590 FIVAIHDETFYKGKKIPKDQKSELINCSAQF-EANAFE----APLTFANADSGLLHSSVK 644
                                                                                                                                                                                                                                                                                                                                                                            540 LEIHTVCSQKEDSL------CPNLIDNGSWPATTTQNSVALK---NAGLISTLKKKTNK 589
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VOLUME: 379
PAGES: 789-
DATE: 1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       y Match . 1.5%; Score 111.5; Local Similarity 17.8%; Pred. No. 6.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CELL TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              IDENTIFICATION METHOD:
OTHER INFORMATION: BRCA2 protein has a negative
OTHER INFORMATION: regulatory effect on growth of human mammary cells.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    INDIVIDUAL ISOLATE:
DEVELOPMENTAL STAGE: adult
TISSUE TYPE: female breast
                                                                                                                                                                                                                                                                                                                          60 KTSSFSDSSHCK------DKSQICSIDTSFEEIQRFDLKRGMTLILEKQWRQFIQLAIV 112
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TITLE: Identification of BRCA2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ORGANELLE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ORGANISM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TYPE: amino acid
STRANDEDNESS: sin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TELEFAX: (919) 419-0383
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NAME: ARLES A. TAYLOR, JR. REGISTRATION NUMBER: 39,395
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICATION NUMBER: FILING DATE: 20 FEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 JOURNAL:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                            3 LSLHTVFLCKEEALNLYARSPCNERFHRSGQPPT---NIIMMKIRSNNGYFNSFRLFTSY 59
                                                                                                                       IKCGDLFENSVVD-----QFNECAVSRKKCVPRKSDVGEFPV-----PDRNAVVQNFNMK 222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Identification of the breast cancer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         789-792
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Nature
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1 to 3418; Genbank locus HSU43746
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Homo sapiens sapiens
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DENEVGFRGFYSAHGTKLNVSTEALQKAVKLFSDIENIS-EETSAEVHPISLSS 1262	04 ASGYLTDENEVGFRGFYSAHGT	Db 12	
- FNECAVSRKKCVPRKS	65 -	Qy 6	_
SEECRDADLHVIMNAPSIGQVDSSKQFEGTVEIKRKFAGLLKNDCNKS 1203	150 TILKTTSEECRDADL	Db 11	
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ISINQNPKGNSGCKFFKDVALMVWEKWGGFAKTALVALFILSVASKADAV 608 ITELSTILDESGSOFEFTOFRKPSYILQKSTFEVPENOM 1149	55 SPAHS : 04 TPSQKAEI	рь 11:	
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EKLFGRALPIRKLRMALA-PHSNFLA	444 EEKEILNELQMEAT	Qy 4	
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LGNTKELHETDLTCVNEPIFKNSTMVLYGDTGDKQATQVSIKKDLVYVLAEEN 955	96 NERNNLALG	Db 89	<u>.</u> ,
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KVQFNQNTNLRVIQKNQEETTSISKITVNPDSEELFSDNENNFVFQVA 895	47 R	.8 qa	-
YGGSVIYTRSDTLPESIIPNLQKAAKSVGRDFNNFI 368	25 RNDAWDGYGGSVIYTRSF	Qу 3:	_
NYESDVELTKNIPMEKNQDVCALNENYKNVELLPPEKYMRVASPS 846	02NYESDVELT	00	-
AVQTFVQDPDLPGALYNHDNEFLHYQDDWYILSSQIENKPDDYIFVYYRG 324	69 GFFTRS	Qy 26	_
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Scoring table:

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Pred. No. is the number of results predicted by chance to have a
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US-08-666-717-1
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US-08-853-659A-5
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US-08-232-463-14
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                                                                                                                                                                  Matches
                                                                                                                                                                                     Query Match
Best Local
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                                                                                                                                                                                                                                                                                                                                                                                                         TELEFAX: (703)583-4109
TELEX: 899149
INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTFRISTICS:
LENGTH: 7218 base pair
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ATTORNEY_AGENT INFORMATION:

NAME: BENT, Stephen A.

REGISTRATION NUMBER: 29,768
REFERENCE/DOCKET NUMBER: 3047
TELECOMMUNICATION INFORMATION:

TELEPHONE: (703)836-9300
TELEFAX: (703)583-4109
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APPLICANT: SCHEIFLINGER, F.
APPLICANT: FALKMER, F. G.
TITLE OF INVENTION: RECOMBINANT FOWLPOX VIRUS
NUMBER OF SEQUENCES: 52
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     COMPUTER READABLE FORM: MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CLASSIFICATION: 435
PRIOR APPLICATIO DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CURRENT APPLICATION DATA:
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       1059 ggatatggtggttctgtactttacacaagaagtgcagttttgcctgaaagcattataccg
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                                                                                                                                                                                                                                                                                                                                                TYPE: nucleic acid STRANDEDNESS: sing TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICATION NUMBER: FILING DATE: 26-AU
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                                                                                                                                                                                                                                                                                                                                                                                                                7218 base pairs
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                                                                                                                                                                  Conservative 237; Mismatches 149;
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US-08-376-843-38

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US-08-786-606-6

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US-08-909-119-1
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                                                                                                                              TELEFAX: 202-408-4400 INFORMATION FOR SEQ ID NO: 3:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT:
APPLICANT:
APPLICANT:
APPLICANT:
APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                      APPLICATION NUMBER: US 08
FILING DATE: 25-MAR-1993
APPLICATION NUMBER: JP 4-
FILING DATE: 27-MAR-1992
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                 CLASSIFICATION: 435
PRIOR APPLICATION DATA:
US 08/036,841
           ORIGINAL SOURCE:
                           MOLECULE TYPE:
                                                                                                                SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                    TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                              SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/426,627
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   COMPUTER READABLE FORM: MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: Tezuka, Kenichi
TITLE OF INVENTION: No. 5756664el Protein with Bone Formation
TITLE OF INVENTION: Ability and Process for Its Production.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1359 gagaacttcttaagagagctgagcaaagaagaaatggatgttttggatg 1407
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CITY: Washington
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                                              TOPOLOGY:
                                                            STRANDEDNESS:
                                                                                                                                                                                                      REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                     NAME: Hammond, Alan W. REGISTRATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
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Takeshita, Sunao
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                             cDNA to mRNA
                                                              double
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                                                                                                                                                                                      35,178
FR: 02481-1285-00000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Process for Its Production.
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; LOCATION:
US-08-426-627-3
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 5, Application US/08426627 Patent No. 5756664
                           TELEPHONE: 202-408-400
TELEFAX: 202-408-4400
INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Best
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LOCATION:
FEATURE:
                                                                                                                                                        FILING DATE: 27-MAR-1992
ATTORNEY/AGENT INFORMATION:
                    SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                               PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                   COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                      TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                     CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT: Tezuka, Kenichi
TITLE OF INVENTION: NO. 57
TITLE OF INVENTION: Abilit
NUMBER OF SEQUENCES: 24
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1290 gtgagagataaagaagtcaccttattcagtaaactgtttgaaggttttaaagagctccaa 1349
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                                                                                                     NAME: Hammond, Alan W. REGISTRATION NÜMBER: 35, REFERENCE/DOCKET NÜMBER:
                                                                                                                                                                                         APPLICATION NUMBER: (FILING DATE: 25-MAR-)
APPLICATION NUMBER: (
                                                                                                                                                                                                                                                                                                                                  COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0,
                                                                                                                                                                                                                                                                   CLASSIFICATION: 435
                                                                                                                                                                                                                                                                                    FILING DATE:
                                                                                                                                                                                                                                                                                                  APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                          ZIP:
LENGTH: 3253 base pairs
                                                                                                                                                                                                                                                                                                                                                                      COMPUTER:
                                                                                                                                                                                                                                                                                                                                                                                                                                          COUNTRY:
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                                                                     202-408-4000
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join(101..2375)
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E: Placenta
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join(38..2375)
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                                                                                                                                                                     UMBER: JP 4-71501
27-MAR-1992
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 1, Application US/08072610 Patent No. 5532133
                                                                                                                   NAME: Gogoris, Adda
REGISTRATION NUMBER: 29,714
REFERENCE/DOCKET NUMBER: 5986
TELECOMMUNICATION INFORMATION:
TELEPHONE: (212)527-7700
TELEFAX: (212)753-6237
                                                            INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
LENGTH: 3337 base pairs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
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                                                                                                                                                                                                                                                                                        SOFTWARE: PatentIn Release #1.0, CURRENT APPLICATION DATA:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NUMBER OF SEQUENCES:
 MOLECULE TYPE:
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LOCATION:
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STRANDEDNESS: doub
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                                                                                                                                                                                                                                         APPLICATION NUMBER: FILING DATE: 199306 CLASSIFICATION: 435
                    TOPOLOGY: 11
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                                                  TYPE:
                                                                                                              TELEX: 236687
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join(97..2540)
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DNA (genomic)
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Monoclonal Antibodies, and Diagnostic Assays
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                                                                                                                                                                                                                                                                                                           Version
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Best Local Similarity
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                                                                                                                                                                                                               NAME: Gogoris, Adda
REGISTRATION NUMBER: 29,714
REFERENCE/DOCKET NUMBER: 5986
TELECOMMUNICATION INFORMATION:
TELEPHONE: (212)527-7700
TELEFAX: (212)753-6237
                                                                                                                                           TELEX: 236687
INFORMATION FOR SEQ ID NO: 1
SEQUENCE CHARACTERISTICS:
LENGTH: 3337 base pairs
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CLONE: PVMB3.3.1
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ORGANISM: Plasmodium vivax
                 MOLECULE TYPE: D
HYPOTHETICAL: NO
ANTI-SENSE: NO
ORIGINAL SOURCE:
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ANTI-SENSE:
                                                                                                                                                                                                                                                                                                                                                                                                        SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    COMPUTER READABLE FORM: MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT: Barnwall, TITLE OF INVENTION:
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                                                                                                                                                                                                                                                                                                                                  ATTORNEY/AGENT INFORMATION:
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STREET: New York
                                                                                                                                                                                                                                                                                                                                                                                                                                                 OPERATING SYSTEM:
                                                                                                                            TYPE: nucleic acid
                                                                                                                                                                                                                                                                                                                                                         CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                           APPLICATION NUMBER: US/08/719,822B FILING DATE: 09/30/96
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COMPUTER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          COUNTRY:
ORGANISM: Plasmodium vivax
                                                                                             TOPOLOGY:
                                                                                                          STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ADDRESSEE:
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10022-7513
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              New York
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805 Third Ave.
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ilarity 48.6%;
Conservative
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                                                                                             linear
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SYSTEM: PC-DOS/MS-DOS
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                                                                       DNA (genomic)
                                                                                                              double
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QΥ
                                                                                                                                                            ; TOPOLOGY: linear; MOLECULE TYPE: cDNA US-08-676-967-2
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US-08-676-967-2
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                                                               Query Match
Best Local Similarity
Matches 133; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 2, Application US/08676967 Patent No. 5747317
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                                                                                                                                                                                                                                                                                             TELEFAX: (415)343-4342
INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                        SEQUENCE CHARACTERISTICS:
LENGTH: 2277 base pairs
                                                                                                                                                                                                                                                                                                                                    TELECOMMUNICATION INFORMATION:
TELEPHONE: (415)343-4341
                                                                                                                                                                                                                                                                                                                                                                                         ATTORNEY/AGENT INFORMATION:
NAME: Osman Ph.D., Richard A
REGISTRATION NUMBER: 36,627
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COMPUTER READABLE FORM: MEDIUM TYPE: Floppy disk
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900 aaattegtgeaagateeaaagtateeggggataeteetaeaateatgaataatgagtatett 959
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.30
                                                                                                                                                                                                                                                                                                                                                                                                                                                        FILING DATE:
CLASSIFICATION:
                                                                                                                                                                                                                   STRANDEDNESS:
                                                                                                                                                                                                                                      TYPE: nucleic acid
                                                                                                                                                                                                                                                                                                                                                                            REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICATION NUMBER: US/08/676,967
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            STREET:
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268 Bush Street, Suite 3200
                                                               Conservative
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                                                                         2.4%; Score 38.2; DB 2; Length 2277; 26.0%; Pred. No. 0.25;
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                                                           Mismatches
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                                                                                                     793 GTNCARATHCARAARMGNGCNGTNAARMGNC 823
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Sequence 2, Application US/08676974 Patent No. 5770422 TELECOMMUNICATION INFORMATION:
TELEPHONE: (415)343-4341
TELEPHANE: (415)343-4342
INFORMATION FOR SEQ ID NO: 2: GENERAL ATTORNEY/AGENT INFORMATION:
NAME: OSMAN Ph.D., Richard A
REGISTRATION UNMBER: 36,627
REFERENCE/DOCKET NUMBER: UCBS COMPUTER READABLE FORM: MEDIUM TYPE: Floppy MOLECULE TYPE: SEQUENCE CHARACTERISTICS: LENGTH: 2277 base pairs SOFTWARE: PatentIn Release #1.0, CURRENT APPLICATION DATA: CORRESPONDENCE ADDRESS: NUMBER OF SEQUENCES: APPLICANT: MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS TOPOLOGY: STRANDEDNESS: CLASSIFICATION: FILING DATE: APPLICATION NUMBER: US/08/676,974 COUNTRY: U ZIP: 94104 STATE: CITY: STREET: ADDRESSEE: INFORMATION: nucleic acid San Francisco CA E: Science & Technology Law Group 268 Bush Street, Suite 3200 USA COLLIŅS, linear .double Human Telomerase KATHLEEN UCB96-055 Version #1.30

US-08-676-974-2

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RESULT 8
US-09-08-487-2
; Sequence 2, Application US/09098487
; Patent No. 5917025
; GENERAL INFORMATION:
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Best Local
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                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT: COLLINS, Kathleen
TITLE OF INVENTION: Human Telomerase
NUMBER OF SEQUENCES: 11
CORRESPONDENCE ADDRESS:
ADDRESSEE: Science & Technology Law Group
STREET: 268 Bush Street, Suite 3200
                                                                                                                                             SOFTWARE: Patentin Release #1.0, Version #1.30 CURRENT APPLICATION DATA: APPLICATION NUMBER: US/09/098,487
                                                                                                                                                                                                                                                       COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
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                                      CLASSIFICATION:
ATTORNEY/AGENT INFORMATION:
NAME: Osman Ph.D., Richard A
REGISTRATION NUMBER: 36.627
REFERENCE/DOCKET NUMBER: UC TELECOMMUNICATION INFORMATION:
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Local Similarity 26.0%; Pred. No. 0.25;
                                                                                                                                                                                                               COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                 STREET: 268 Bush Str
CITY: San Francisco
                                                                                                                                                                                                                                                                                                                        COUNTRY:
                                                                                                                              FILING DATE:
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                      UCB96-055
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                                                                                                                                                                                                                                                                                                                                             Sequence 1, Application US/08466603
Patent No. 5726018
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                INFORMATION FOR SEQ ID NO:
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LENGTH: 2277 base pairs
TYPE: nucleic acid
ZIP: 20001
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TOPOLOGY: 1 MOLECULE TYPE:
                                                                                                                                                                                                 APPLICANT: Pasternack, Gary R.
APPLICANT: Kuhajda, Francis P.
TITLE OF INVENTION: No. 5726018el Mammalian Protein Associated With
TITLE OF INVENTION: Uncontrolled Cell Division
NUMBER OF SEQUENCES: 9
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1380 agcaaagaagaaatggatgttttggatggac 1410
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STATE:
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                                                                                                                    n: 1001 G Street, N.W.
Washington, D.C.
: District of Columbia
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(415)343-4342
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RESULT 10
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; LOCATION:
US-08-466-603-1
                                                                                                                                                                                                                                                                                                 Sequence 1, Application US/08314503A
Patent No. 5734022
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INFORMATION FOR SEQ ID NO: 1:
              COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatil
                                                                                                                                                                                         APPLICANT: Pasternack, Gary R.
APPLICANT: Kuhajda, Francis P.
TITLE OF INVENTION: No. 5734022el Mammalian Protein Associated With
TITLE OF INVENTION: Uncontrolled Cell Division
NUMBER OF SEQUENCES: 9
                                                                                                                                                                          CORRESPONDENCE ADDRESS:
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LENGTH: 1052 base pairs
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TELEFAX: 202 508-9299
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PRIOR APPLICATION DATA:
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APPLICATION NUMBER: US/08/466,603
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COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                        STREET: 1001 G Street, N.W. CITY: Washington, D.C.
                                                                                       COUNTRY:
                                                                                                                                                          ADDRESSEE:
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TYPE: n
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n Release #1.0, Version #1.25
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Pred. No. 0.48;
0; Mismatches 94; Indels 0
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US-08-314-503A-1
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LENGTH: 1052 base pairs
MEDIUM TYPE: ,Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/468,066
                                                                                                                    ZIP: 20001
COMPUTER READABLE FORM:
                                                                                                                                                                                                                                     NUMBER OF SEQUENCES: 9
                                                                                                                                                                                                                                                                      TITLE OF INVENTION:
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REGISTRATION NUMBER: 34,698
REFERENCE/DOCKET NUMBER: 1107.47
TELECOMMUNICATION INFORMATION:
TELEPHONE: 202 508-9153
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                                                                                                                                                                       STATE:
                                                                                                                                                                                                                   ADDRESSEE: Banner, Birch, McKie & Beckett
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                                                                                                                                                                                                                                                                                 Francis P.
No. 5756676el Mammalian Protein Associated With
                                                                                                                                                                                                                                                                        Uncontrolled Cell Division
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ATTORNEY/AGENT INFORMATION:

CLASSIFICATION: 435 PRIOR APPLICATION DATA:

APPLICATION NUMBER:

US 08/314,503

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Best Local S
                                                                                                                                                                                                                                                                                                                                                                 Sequence 1, Application Patent No. 5874234 GENERAL INFORMATION:
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INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
                                             COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0,
CURRENT APPLICATION DATA:
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ORIGINAL SOURCE:
                                                                                                                                                                                                                                                          NUMBER OF SEQUENCES: 9
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                APPLICANT: Pasternack, Gary R.
APPLICANT: Kuhajda, Francis P.
TITLE OF INVENTION: No. 5874234el Mammalian Protein Associated
TITLE OF INVENTION: Uncontrolled Cell Division
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REGISTRATION NUMBER: 34,698
REFERENCE/DOCKET NUMBER: 111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Local Similarity
nes 93; Conserv
                                                                                                                                                                                       CITY: Washington, D.C. STATE: District of Columbia
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TYPE: nucleic acid
              APPLICATION NUMBER: US/08/466,717 FILING DATE: 06-JUN-1995
                                                                                                                                                                         COUNTRY:
                                                                                                                                                                                                                            STREET:
                                                                                                                                                                                                                                             ADDRESSEE:
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CLASSIFICATION:
                                                                                                                                                      20001
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97..843
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 36.6; DB 2;
Pred. No. 0.48;
0; Mismatches 94;
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                                                                  Version #1.25
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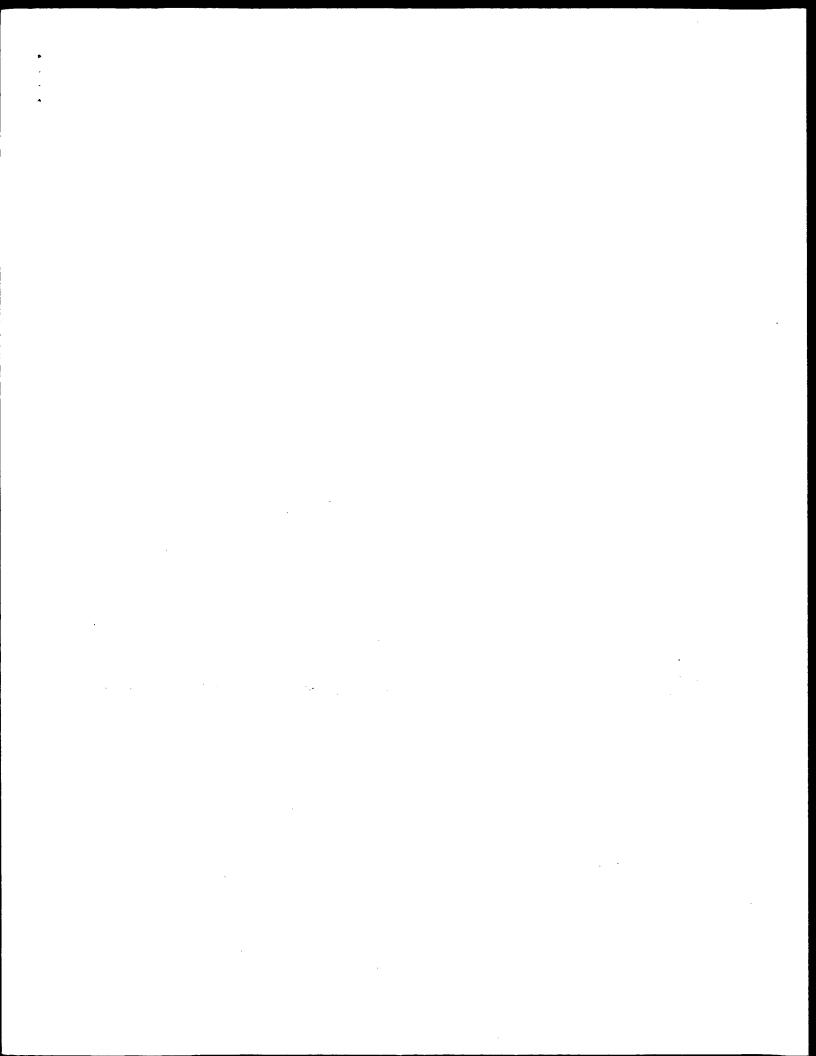
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Query Match
Best Local Similarity
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US-08-466-717-1
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INFORMATION FOR SEC ID NO: 1:
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NAME: POSOTSKE ESQ., Lau
REGISTRATION NUMBER: 34,
                                                                 SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: PCT/US95/12414
                                                                                                                                                       COMPUTER READABLE FORM: MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                              APPLICANT: Pasternack, Gary R.
APPLICANT: Kuhejda, Francis P.
TITLE OF INVENTION: Novel Mammalian Protein Associated With
TITLE OF INVENTION: Uncontrolled Cell Division
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LENGTH: 1052 base pairs
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PRIOR APPLICATION DATA:
APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                              NUMBER OF SEQUENCES: 9
CORRESPONDENCE AUDRESS:
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                                                                                                                COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
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                              CLASSIFICATION:
                                                   FILING DATE:
                                                                                                                                                                                                          COUNTRY:
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                                                                                                                                                   Floppy disk
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US 08/314,503
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Pred. No. 0.48;
0; Mismatches 94;
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                                                                                                                                        COUNTY.

ZIP: 94306
ZIP: 94306
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
MEDIUM TYPE: IBM PC compatible
TOMPUTER: IBM PC-DOS/MS-DOS
TOMPUTER: TEMPEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                         Patent No. 5821091
GENERAL INFORMATION:
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Best Local Similarity 49.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    INFORMÁTION FOR SEQ ID NO: 1: SEQUENCE CHARACTERISTICS:
               ATTORNEY/AGENT INFORMATION:
NAME: Sholtz, Charles K.
REGISTRATION NUMBER: 38,615
                                                                                                                              SOFTWARE: Patentin Release #1.0, Version #1.25 CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                            NUMBER OF SEQUENCES: 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1320 aaactgtttgaaggttttaaagggctccaacgagatgaagagaacttcttaagagagctg 1379
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TELEFAX: 202 508-9299
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ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        658 GACGAGGAGGACGAGGATGAGGAGGAGGAAGGTGAAGAGGAGGACGTGAGTGGAGAGGAG 717
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          778 CTTGGTG 784
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               718 GAGGAGGATGAAGAAGGTTATAACGATGGAGGAGGTAGATGACGAGGAAGAATGAAGAAGAG 777
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                                                                                                                                                                                                                                                                                     STREET: 350 Caml
CITY: Palo Alto
STATE: CA
                                                                                             APPLICATION NUMBER: US/08/592,126 FILING DATE:
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LOCATION:
                                                                           CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                            ADDRESSEE:
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REFERENCE/DOCKET NUMBER: 1107.51507
REFERENCE/DOCKET NUMBER: 4600-0111
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                                                                                                                                                                                                                                                                                                                        350 Cambridge Avenue, Suite 250
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97..843
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Best Local Similarity
                              APPLICATION NUMBER: none FILING DATE: n/a INFORMATION FOR SEQ ID NO: 2: SEQUENCE: CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TELEFAX: (415) 324-0960 INFORMATION FOR SEQ ID NO: 54: SEQUENCE CHARACTERISTICS:
                                                                                                                                                                   OPERATING SYSTEM: MS-DOS
SOFTWARE: Word Processor (WordPerfect 5.1)
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                         COMPUTER READABLE FORM: MEDIUM TYPE: Diskett
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TITLE OF INVENTION: A Salmonella Sequence, Methods Of Detection
TITLE OF INVENTION: Of A
TITLE OF INVENTION: Salmonella Sequence, And Methods Of Detection
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                                                                                                     PRIOR APPLICATION DATA:
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	1307 RTDNTCGPEPALVERIEKTVEEGERIIVKEVEEIEEEVEKEVEKVGRTEMTLFQRLA 1363	1253 PEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELEKAAKSIGRDFSTFI 1306	9 8		< ⊢	1034NELKELTAPLLLKLVGVLACAFLIVPSADAVDALKTCACLLKGCRIELAKC 1084 :	1003RTTGGRSSRPLSAFRSGFSKGIFDIVPLPSK 1034 :	961QSADL 1003 961QSADL 1003 1045 HTSETTERTPKHD-VHQICDKDAQQDLNLDIEKITETGALKPTGECSGEQSPDTNYE 1100	923 EMDVLDGLKMEATEVEKLFGRALPIRKLMAVATHCFTS 961 :::	874 RTIIKEVEEIEEEVEKVRDKEVTLFSKLFEGFKELQRDEENFLRELSKE 922 ::: :: :: :: :: :: :: ::: :::::::::::	827 PESIIPELQTAAQKVGRDFNTFIKTDNTCGDEPPLVERLEKKVEEGE 873 :	784DWYILSSKVENSPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVL 825 : : : : : : : : : : : :	726 QLHEFHTEENKLVGNLSWRIRTBDGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLYQD 784 : : : : : : : 769 QMHFAELQEKFUSLQSBHKILHDQHCQMSSKMSELQTYVDSL 810	690PVPDPSVLVQKFDMKDFSGKWFITRGLNPTEDAFDC 725	638 VAC-LQTCNNRPDETECQIKCGDLFENSVVDEFNECAVSRKKCVPRKSDVGDF- 690 :	612 KTCTCLACAAN 637	552 HNLSPAHSINONVPKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADAVDAL 611 : ::::::::::::::::::::::::::::::::::	490 KSEAGGLKQEIMTLKEEQNKMQKEVNDLLQENEQLMKVMKTKHECQNLESEPIR 544
663 639	QY 612 KTCTCLLKECRLELAKCISNPACAANVACLQTCNNRPDETECQIKCGDLFE 662	Qy 552 HNLSPAHSINQNVPKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADAVDAL 611	Oy 492 YVGSKLPGHKRFSWGWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGK 551	Qy 438 VRELSKEEKEILNELQMEATEVEKLEGRALDIRKLRMALAPHSNFLANHETIKY 491 :: : : : : : : : : :	Qy 382 RLEKTAEEGEKLLIKEAVEIEEEVEKEVEKVRDTEMTLFQRLLEGFKELQQDEENF 437 : : : : : : : : : : : : : : :	Query Match 1.8%; Score 135.5; DB 2; Length 1312; Best Local Similarity 19.7%; Pred. No. 0.012; Matches 124; Conservative 95; Mismatches 218; Indels 191; Gaps	; ORIGINAL SOURCE: ; INDIVIDUAL ISOLATE: Rad50.pro-translation of SEQ ID NO:54 US-08-592-126-148	; TOPOTHETICAL: NO	AX: ON FO E CH.	REGISTRATION NUMBER: 38,615 : REFERENCE/DOCKET NUMBER: 4600-0111 : TELECOMMUNICATION INFORMATION: : TELEPHONE: (415) 324-0880	on i⊣	CORRATING SYSTEM: PC-DOS/MS-DOS CURRENT APPLICATION DATA: APPLICATION NUMBER: US/08/592,126	H H O	E: Pa	INVENTION: POLYPEPTIDES SEQUENCES: 151 DENCE ADDRESS: DE Dehlinger & Associates	GENERAL INFORMATION: APPLICANT: Gregory Dolganov TITLE OF INVENTION: Transcripts Encoding Immunomodulatory	RESULT 2 US-08-592-126-148 Sequence 148, Application US/08592126	

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                                                                                                                                               ; MOLECULE TYPE: protein US-08-021-601-2
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GENERAL INFORMATION:
                                                        Matches 139;
                                                                         Query Match
Best Local
                                                                                                                                                                                                                                      TELEFAX: 404/688-9880
INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
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APPLICANT:
                                                                                                                                                                                                                                                                                                               ATTORNEY/AGENT INFORMATION:
NAME: Spratt, Gwendolyn D.
REGISTRATION NUMBER: 36,016
REFERENCE/DOCKET NUMBER: 14
TELECOMMUNICATION INFORMATION:
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TITLE OF INVENTION:
NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                             CURRENT APPLICATION DATA:
APPLICATION NUMBER: US
FILING DATE: 19930212
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MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CORRESPONDENCE ADDRESS:
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733 EENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHD---NEYLLYQDDWY--I 787
                                                                                                                                                                                                       LENGTH:
TYPE: A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SOFTWARE: PatentIn Release #1.0, Version #1.25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COUNTRY:
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                                                                                                                                                                                   TOPOLOGY:
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                                                                         Similarity
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Singh, Yogendra
TVENTION: ANTHRAX TOXIN FUSION PROTEINS AND
TVENTION: RELATED METHODS .
SEQUENCES: 12
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                                                      Conservative 117;
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                                                    Score 132; DB 1; Length 776; Pred. No. 0.0098; 7; Mismatches 254; Indels 3
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                                                         Indels 300;
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                                                                                                                                                                                                                                                                                              GENERAL INFORMATION:
NUMBER OF SEQUENCES: 35
CORRESPONDENCE ADDRESS:
CORRESPONDENCE ADDRESS:
Townsend and Townsend and Crew LLP
STREET: Two Embarcadero Center, Eighth Floor
CITY: San Fra.cisco
STATE: California
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1007
                                                                                                                                  APPLICANT: Nichols, Peter J.
TITLE OF INVENTION: Anthrax Toxin Fusion Proteins
TITLE OF INVENTION: Related Methods
                                                                                                                                                                                                    APPLICANT: APPLICANT:
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Singh, Yogendra
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ; MOLECULE TYPE: protein US-08-082-849B-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches 139;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  INFORMATION FOR SEQ ID NO: SEQUENCE CHARACTERISTICS: LENGTH: 776 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NAME: Weber, Kenneth A.
REGISTRATION NUMBER: 31,677
REFERENCE/DOCKET NUMBER: 1528
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 576-0200
TELEPAX: (415) 576-0300
                                        1165 KWYITSGLNPTFDAFDCQLHEFHTEGDNKLV--GNISWRIKTLDSGFFTRSAVQKFVQDP 1222
                                                                                                                        1110 QIKCGDLFENSYVDE--FNECAVSRKKCVPRK---SDLGEFPAPDPSVLVQNFNISDFNG 1164
                                                                                                                                                                                                               1050 VLACAFLIVPSADAVDALKTCACLLKGCRIELAKCIANPACAANVACLQTCNNRPDETEC 1109
                                                                                                                                                                                                                                                                                                              1007 GRSSRPL--
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FILLING DATE: 12-FEB-1993
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SOFTWARE: PatentIn Rel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COMPUTER READABLE FORM: MEDIUM TYPE: Floppy disk
511 AGYLENG-------
                                                                                                                                                                            451 -----GADLVDST-----
                                                                                                                                                                                                                                                          397 GLIDSPSINLDVRKQYKRDIQNIDALLHQSIGSTLYNKIYLYENMNINNLTATL----- 451
                                                                                                                                                                                                                                                                                                                                              357 L-----NRIQVDSSNP-----LSEK--EKEFLKKLKLDIQPYDINQRLQDTG 396
                                                                                                                                                                                                                                                                                                                                                                                         951 MAVATHCFTSPCHDRIRFFSSDDGIGRLGITRKRINGTFLLKILPPIQSAD----LRTTG 1006
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             908 ---LQRDEENFLRELSKEEMDVLDGLKMEATEV----EKLFGRALPI------RKL 950
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        177 IKNASDSDGQDLLFTNQLKEHPTDFSVEFLEQNSNEVQEVFAKAFAYYIEPQHRDVLQLY 236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          129 L---VIQSSEDYVENTEKALN------VYYEIGKILSRDILSKINQPYQKFLDVLNT 176
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   788 LSSKVENSPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDFNT 847
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       733 EENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHD---NEYLLYQDDWY--I 787
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 72 EMYKAIGG---KIYIVDGDITKHISLEALSEDKKKIKDIYGKDALLHEHYVYAKEGYEPV 128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FILING DATE: 25 CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
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                                                                                                                                                                                                                                                                                                                                                                                                                                  QIPIEPKKDDIIHSLSQEEKELLKRIQIDSSDFLSTEEKEFLKKLQIDIRDSLSEEEKEL 356
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APEAFNYMDKFNEQEINLSLEELKDQRMLSRYEKWEKIKQHYQHWSDSLSEEGRGLLKKL 296
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        -----DNTKINRGIFNEFKKNFKYSISSNYMIVDINERPALDNERLKWRIQLSPDTR 510
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -----EVEEIEEEVEKVRDKEVTLFSKLFEGFKE-----
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative 117; Mismatches 254; Indels 300; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               linear
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                                                                                                                                                                                                                                                                                                     ------SAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKLVG 1049
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PCT-US94-01624-2
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                                                 Query Match
                                                                                                                                                                                                                          TELEFAX: (415): 543-5043
INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                               TELEPHONE: (415) 543-9600
                                                                                                                                                                                                                                                                                                                                         ATTORNEY/AGENT INFORMATION:
NAME: Weber, Kenneth A.
REGISTRATION NUMBER: 31,677
REFERENCE/DOCKET NUMBER: 15
                                                                                                                                          MOLECULE TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT: Nichols, Peter J.
TITLE OF INVENTION: ANTHRAX TOXIN FUSION PROTEINS AND TITLE OF INVENTION: RELATED METHODS
NUMBER OF SEQUENCES: 31
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT: Leppla, Stephen H. APPLICANT: Klimpel, Kurt R. APPLICANT: Arora, Naveen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 696 AGYLLDKNQSDLVTNSKKFIDIFKEEGSNL 725
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               585 FNVHNRYASNIVESAYLILNEWKNNIQSD-
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                                                                                                                                                        TYPE: amino acid
TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0,
  Local Similarity, 17.2%; Pred. No. 0.0098; pes 139; Conservative 117; Mismatches 254;
                                                                                                                                                                                                                                                                                                                                                                                                                                  FILING DATE: J
CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICATION NUMBER: PCT/US FILING DATE: June 25, 1993
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ZIP:
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                                                                                                                                                                                                       LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             COUNTRY:
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                                                                                                                                                                                                     776 amino acids
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Singh, Yogendra
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                                                                                                                                        protein
                       1.8%; Score 132; DB 3; Length 776; 17.2%; Pred. No. 0.0098;
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                                                                                                                                                                                                                                                                                                                                              15280-115
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Indels 300; Gaps
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Qy Db

788 LSSKVENSPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDFNT 847

733 EENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHD---NEYLLYQDDWY--I 787

72 EMYKAIGG---KIYIVDGDITKHISLEALSEDKKKIKDIYGKDALLHEHYVYAKEGYEPV 128

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129 L---VIQSSEDYVENTEKALN-------VYYEIGKILSRDILSKINQPYQKFLDVLNT 176
                                                                                                                                                                                                                               ADDRESSEE: Woodcock Washburn Kurtz Mackiewicz ADDRESSEE: No. 5863724ris STREET: One Liberty Place 46th. Floor
COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SVLPNSIIPELEKAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGE-RIIVKEV--
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PNIAEQYTHQDEIYEQVHSKGLYVPESRSILLHGPSKGV-ELRNDSEGFIHEFGHAVDDY 695
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FNVHNRYASNIVESAYLILNEWKNNIQSD-+----LIKKVTNYLVDGNGREVFTDITL 636
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NQPGVLYNHDNEYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDAWDGYGGAVVYTR--S 1280
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ------DNTKINRGIFNEFKKNFKYSISSNYMIVDINERPALDNERLKWRIQLSPDTR 510
                                                                                                                                                                                                                                                                                                                                                                                                                                         Joseph Bryan, Lydia Aguilar Bryan, Daniel Nelson, Thomas, Gilbert Cote, and Robert Gagel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -EEIEEEVEKEVEKVGRTEMTLFQRLAEGFNELKQDEENFVRE-------
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                                                                                                                                                                                                                                                                                                                                                                                                           Sequence Encoding Mammalian Sulfonylurea Receptor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         -PEPPLVERLEKKVEEGERTIIK-
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                                                                                                                                               US-08-404-531B-28
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                                                       Sequence 28, Application US/08404531B Patent No. 5863724 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches 109;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local Similarity
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INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TOPOLOGY: linear MOLECULE TYPE: protein
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ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SOFTWARE: PatentIn Release #1.0, Version CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1077
   APPLICANT: Joseph Bryan, Lydia Aguilar Bryan, Daniel APPLICANT: Thomas, Gilbert Cote, and Robert Gagel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1118 ENSVVDEFNECAVSRKKCVPRKSDLGEFPAPDP-------
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICATION NUMBER: FILING DATE: 15-MAI
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US-08-404-531B-6

Sequence 6, Application US/08404531B Patent No. 5863724

GENERAL INFORMATION:

APPLICANT:

Patent No.

5863724

NUMBER OF SEQUENCES: 4
CORRESPONDENCE ADDRESS: TITLE OF INVENTION:

49

STREET: CITY: I

Philadelphia PA USA

COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compati

COUNTRY: UZIP: 19103

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NUMBER OF SEQUENCES: 4

CORRESPONDENCE ADDRESS:
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REGISTRATION UNMBER: BYLR
REFERENCE/DOCKET NUMBER: BYLR
TELECOMMUNICATION INFORMATION:
"DT.EPHONE: 215-568-3100
"FR.3439
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INFORMATION FOR SEQ ID NO: 28:
1248 KIENKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELEKAAKSIGRDFSTFIR 1307
                                                                                                                                                                                1163 NGKWY----ITSGLNPTFDAFDCQLHEFHTEGDNKLVGNISWRIKT------ 1205
                                                                                                                                                                                                                                                                     1118 ENSVVDEFNECAVSRKKCVPRKSDLGEFPAPDP------SVLVQNFNI-SDF 1162
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CLASSIFICATION: 435
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE CHARACTERISTICS:
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                                            846 STPMIVFLDDPFSALDVHLSDHLMQAGILELLRDDKRTVVLVTHKLQYLPHA-DWIIAMK 904
                                                                                                                              794 NKQRYKMVIEACSLQPDIDIL------PHGDQTQIGERGINLSTGGQRPDQCRPEPST 845
                                                                                                                                                                                                                          739 WNSLPD-----SEGRRPQQPRAGDSGRFGCQEQRPCGYASQKPWLLNATVEENITFESPF 793
                                                                                                                                                                                                                                                                                                                    685 FFTWTPDGIPTLSNITIRIPRGQLTMIVGQVGCGKSSLLLATLG-----EMQKVSGAVF 738
                                                                                                                                                                                                                                                                                                                                                                                                      637 KYQAVPLKVVNRKRPAREEVRDLLGPLQ------RLTPSTDG-DADNFCVQIIGG 684
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   OPERATING SYSTEM: PC-DOS/MS-DOS
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICATION NUMBER:
                                                                                       ------EDSGF------FTRSAVQKFVQDPNQPGVLYNHDNEYLHYQDDWYILSS 1247
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                                                                                                                                                                         Matches 163;
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                                                                                                                                                                                                                                                                                                                                                                                                   TELEFAX: (619) 535-8949 INFORMATION FOR SEQ ID NO:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FILING DATE: 27-JUL-1992
ATTORNEY/AGENT INFORMATION:
NAME: Campbell, Cathryn A.
REGISTRATION NUMBER: 31,815
REFERENCE/DOCKET NUMBER: P-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FILING DATE: 30-JAN-1990
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/919,951
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APPLICATION NUMBER: US 08/125,077
FILING DATE: 22-SEP-1993
APPLICATION NUMBER: US PCT/US 94/10730
FILING DATE: 21-SEP-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/472,319
APPLICATION NUMBER: US 07/472,319
                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE CHARACTERISTICS:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Rclease #1.0,
CURRENT APPLICATION DATA:
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APPLICANT: Leivo, Ilmo
TITLE OF INVENTION: Nucleic Acids Encoding Merosin, Merosin
TITLE OF INVENTION: Fragments and Uses Thereof
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                                                                                                                       294 NEFLHYQDDWYILSSQIENKPDDYIFVYYRGRNDAWDGYGGSVIYTRSPTLPE-SIIPN- 352
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                                       352 ----LQKAAKSVGRDFNNFITTDNSCGPEPPLVERLEKTAEEGEKLLIKEAVEIEEEVEK 407
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50 TAAKLQ-AVKDKARQAND--TAKDVLAQITELHQNLDGLKKNYNKL--ADSVAKTNAVVK 104
                                                                                                                                                                                           Local Similarity
                                                                                                                                                                                                                                                                                                                       TOPOLOGY:
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STATE: Californi
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                                                                                  STREET: 4370 La Jolla Village Drive, Suite 700
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20.0%; Pred. No. 0.46;
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CURRENT APPLICATION DATA: APPLICATION NUMBER: US
                                                                                                         COMPUTER READABLE FORM:
                                                                                                                                                                                                                                              CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                TITLE OF INVENTION: Nucleic Acids TITLE OF INVENTION: Fragments and NUMBER OF SEQUENCES: 23
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                                                                                                                                                                            ADDRESSEE: Campbell and Flores STREET: 4370 La Jolla Village | CITY: San Diego
                                 MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC Compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
                                                                                                                                                  COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TRSAVLPESIIPELQTAAQKVGRDFNTFIKTDNTCG-----PEPPLVE-----
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Best Local Similarity
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SEQUENCE CHARACTERISTICS:
LENGTH: 3111 amino acids
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APPLICATION NUMBER: US 08/125,077
FILING DATE: 22-SEP-1993
APPLICATION NUMBER: US PCT/US 94/
FILING DATE: 21-SEP-1994
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APPLICATION NUMBER: US 07/919,951
FILING DATE: 27-JUL-1992
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                                                                                                                                                                                                                                                                                                                       2290 KKADAVRVIT---
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CLASSIFICATION:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NAME: Campbell, Cathryn A. REGISTRATION NUMBER: 31,815
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TELEPHONE:
                                                                                                                                                                                                                                                                                                                                                             DAVDALKTCTCLLKECRLELAKCI-----SNPACAANVACLQTCNNRPDETECQIKCGD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VSFLWDVGSGVGRVEYPDLTIDDSYWYRIVASRTGRNGTI-----SVR---ALDGPKAS 2255
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   KRFSWGW----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VE---KLFGRALPIRKLRMALAPHSNFLANHET----IKYYVGS---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EVEK---VRDTEMTL-----FQRLLEGFKELQQDEENFVRELSKEEKEILNELQMEATE 458
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                                                                                                                                                                                                                           -----GCTVS-----PQVEDSEGTIQFDGEGYALVSRPIRWYPNISTVMFKFRT 2371
-VQDPKYPGILYHDNEYLLYQDDWYILSSKVENSPEDYIFVYYKGRNDAWDGYGGSVLY 820
                                            QKQANISIVDICT-----NQEENIATSSSGNNFGLDLKADDKIYFGGLPTLRNLSMKARP 2486
                                                                                         TRGLNPTFDAFDCQLHEFHTEENKLV----GNLSWRIRTPD----GGFFT-RSAVQKF--
                                                                                                                                                                                                                                                                        LFENSVVDEFNECAVSRKKCVPRKSD-------VGDFPV---PDPSVLVQKF-- 702
                                                                                                                                                                                                                                                                                                                                                                                                            IVPSTHHSTSP------PGYTILDV------DANAMLFVGGLTGKL 2289
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                                                                                                                                                                                   -DMKDF ----
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                                                                                                                                                                                                                                                                                                                     --FTGCMGETYFDNKP---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              --EDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQ 545
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             96; Mismatches 262;
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                                                                                                                                                                                                                                                                                                                       ---- IGLWNFREKEGDCK---- 2328
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                                                                                                                                                                                   -SGKW-----FI 712
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Query Match 1.5%; Score 115.5; DB 2; Length 1130; Best Local Similarity 20.0%; Pred. No. 0.46; Matches 163; Conservative 96; Mismatches 262; Indels 293; Gaps 43; Qy 294 NEFLHYQDDWYILSSQIENKPDDYIFYYYRGRNDAWDGYGGSVIYTRSPTLPE-SIIPN- 352	TELEPHONE: (619) 535-9001 INFORMATION FOR SEQ ID NO: 2: SEQUENCE CHARACTERISTICS: LENGTH: 1130 amino acids TYPE: amino acid TOPOLOGY: linear MOLECULE TYPE: protein US-08-125-077-2	FILING DATE: 30-JAN-1990 PRIOR APPLICATION DATA: APPLICATION NUMBER: US 07/919,951 FILING DATE: 27-JUL-1992 ATTORNEY/AGENT INFORMATION: NAME: Campbell, Cathryn A. REGISTRATION NUMBER: 31,815 REFERENCE/DOCKET NUMBER: 8-LA 9721 TELECOMMUNICATION INFORMATION:	US/08/125, 1993 US PCT/US 1994	COUNTRY: USA ZIP: 92122 COUNTRY PERMANER FORM: MEDIUM TYPE: Floppy disk COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS SOFTWARE: Patentin Release #1.0, Version #1.25 CURRENT APPLICATION DATA:	SENETT	pplication 72231 72231 72231 584 72231 584 RMATION:	QY 864REKKVEGGERTIKEVBEIEEEKKVRD-KEVYLFSKLFEGKKELPEGKELPEG E 913	2487 EVNLKKYSGCLKDIEISRTPYNILSSPDYVGVTKGCSLENVY 821 TRSAVLPESIIPELQTAAQKVGRDFNTEIKTDNTCGPEPPLVE
CORRESPONDENCE ADDRESS: ADDRESSEE: Campbell and Flores STREET: 4370 La Jolla Village Drive, Suite 700 CITY: San Diego STATE: California COUNTRY: USA	77-4 4, Application U 5872231 584086 INFORMATION: ANT: Engvall, E ANT: Leivo, III OF INVENTION: OF INVENTION: OF INVENTION: OF INVENTION:	OY 864	506 EVNLKKYS 821 TRSAVLPE 548 TVSFPR		606 DAVDALKTCTC : : 309 KKADAVRVIT- 660 LFENSVVDEFN 347	Qy 501 KRESWGW	QY 408 EVEKVRDTEMTLFQRLLEGFKELQODEENFVRELSKEEKEILNELQMEATE 458	Db 6 NDVKENEDHLNGLKTRIENA

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Best Local Similarity
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LENGTH: 3111 amino acids
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FILING DATE: 21-SEP-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 0
FILING DATE: 30-JAN-1990
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OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
2372 FSSSALLMYLATRDLRDFMSVELTDGHIKVSYDLGSGMASVVSNQNHNDGKWKSFTLSRI 2431
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MEDIUM TYPE: Floppy disk
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                                                                                                                                                                                                                                               IVPSTHHSTSP-----
                                                                                                                                                                                                                                                                                   LFSHGKHNLSPAHSINQNVPKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKA 605
                                                                                                                                                                                                                                                                                                                           VSFLWDVGSGVGRVEYPDLTIDDSYWYRIVASRTGRNGTI-----SVR---ALDGPKAS 2255
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                                                                                                                    LFENSVVDEFNECAVSRKKCVPRKSD-------VGDFPV---PDPSVLVQKF-- 702
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(619) 535-8949
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                                                                              -GCTVS-----PQVEDSEGTIQFDGEGYALVSRPIRWYPNISTVMFKFRT 2371
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                                          -DMKDF-
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20.0%; Pred. No. 2.4
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US-08-568-459A-4
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                                                                                                                                                                                                         REFERENCE/DOCKET NUMBER: NI
TELECOMMUNICATION INFORMATION:
TELEPHONE: (619) 235-8550
TELEFAX: (619) 235-0176
INFORMATION FOR SE) ID NO: 4:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GENERAL INFORMATION:
                               TOPOLOGY: linear MOLECULE TYPE: pro-
HYPOTHETICAL: NO ORIGINAL SOURCE:
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MEDIUM TYPE: Floppy disk
                                                                                                                                                                   SEQUENCE CHARACTERISTICS:
LENGTH: 1435 unino acids
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TITLE OF INVENTION: BINDING DOMAINS FROM PLASMODIUM VIVAX
TITLE OF INVENTION: AND PLASMODIUM FALCIPARUM ERYTHROCYTE BINDING PROTEINS
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                                                                                                                                                                                                                                                                                                                                                                                    APPLICATION NUMBER: US/08/568,459A FILING DATE: 07-DEC-1995 CLASSIFICATION: 435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS SOFTWARE: PatentIn Release #1.0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CITY: Newport Beach
STATE: California
                                                                                                                        TYPE: amino acid
STRANDEDNESS: sir
                                                                                                                                                                                                                                                                                                                      NAME: Israelsen, Ned REGISTRATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STREET:
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               ORGANISM:
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: Chitnis, Chetar
: Miller, Louis F
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      620 Newport Center Drive
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                  Plasmodium falciparum
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                                                                                                                                                                                                                                                                                                                         29,655
                                                                                                                                                                                                                                                                                                    NIH121.001CP1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Version
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           16th Floor
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US-08-353-700-1
                                                                                                                                                Sequence 1, Application US/08353700 Patent No. 5599919
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Matches 171; Conserv
GENERAL INFORMATION:

APPLICANT: YEN, TIMOTHY J.

APPLICANT: RATTNER, JEROME B.

TITLE OF INVENTION: NUCLEIC ACID ENCODING A

TITLE OF INVENTION: TRANSIENTLY-EXPRESSED KINETOCHORE PROTEIN.
                                                                                                                                                                                                                                                                                                                              1045 ----NTPGP---LDNTSEETTERISNNEYKVNEREDERTLTKEYEDI
                                                                                                                                                                                                                                                                                                                                                                                  1305 FIRTDNTCGPEPALVERIEKTVE-------EGERIIVKEVEEI 1340
                                                                                                                                                                                                                                                                                                                                                                                                                                            1004 VNMNVEKELKDTL-----ENPS------SSLDEGKAHEELSEPNLSSDQDMS-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1135 CVPRKSDLGEFPAPDPSVLVQNFNIS---DFNGKWYI-TSGLNPTFDAFDCQLHEFHTEG 1190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1245 LSSKIENKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELEKAAKSIGRDFST 1304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1191 DNKLVGNISWRIKTLDSGFFTRSAVQKFVQDPNQPGVLYNHDNEYLH------YQDDWYI 1244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1088 PACAANVACLQTCNN-------RPDETECQIKCGDLFENSVVDEFNECAVSRKK 1134
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1032 SKNELKELTAPLLLKLVGVLACAFLIVP--SADAVDALKTCACL-LKG-CRIELAKCIAN 1087
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  892 SINNGDDSGSGSATVSESSSSNTGLSIDDDRNGDTFVRTQDTANTEDV----IRKENADK 947
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 837 SSPNDNINVTEQGDNISGVNSKPLSDDVRPDKKELEDQNSDESEETVVNH-----ISKSP 891
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  785 KGNEQKERDDDSLSKI------SVSPENSRPETDAKDTSNLLKLKGDVDISMPKAVIG
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       972 DDGIGRLGITRKRINGTFLLKILPPIQSADLRTTGGRSSRPLSAFRSGFSKGIFDIVPLP 1031
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     709 VYLKKYSEKCSNLNFEDEFKEELHSDYK-------NKCTMCP------ 744
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            914 NFLRELSKE--EMDVLDGLKMEATEVEKLFGRALPIRKLMAVATHCFTSPCHDRIRFFSS 971
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   651 ECKEKPCEDDNCKSKCNSYKEWISKKKEEYNKQAKQYQEYQKGNNYKMYSEFKSIK--PE 708
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    600 DVWNVI--SWVFKDKTVCKEDDI-----ENIPQFFRWFSEWGDDYCQDKTKMIETLKV 650
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       520 AIYESRILKRKYKNKDDKE----VCKIINKTF------ADIRDIIGGTDYW-----
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         460 FGCDKNSVDTNTKVWECKNPYILSTKDVCVPPRRQELCLGNIDRIYDKNLLMIKEHILAI 519
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              378 HTLSKEYE-TQKVPKEN--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      552 HNLSPAHSINQNVPKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADAVDAL 611
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DEDEKGADEERHSTSES---LSSPEEKMLTD-NEGGNSLNHEEVKEHTSNSDNVQQSGGI 1003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ---EKKVEEG-----ERTIIKEVEEIEEEVEKVRDKEVTLFSKLFEGFKELQRDEE 913
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   --EVKDVPISIIRNNEQTSQEAVPE-ENTEI---AHRTETP-----SISEG------P 784
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDFNTFIK-TDNTCGPEPPLVERL--
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         -NDLSNRKLVGKINTNSKY---VHRNKKNDKLFRDEWWKVIKK-----------
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2; Mismatches 315; Indels 280;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           -- AENYLIKI----SENKNDAKVSL 412
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TELEFAX: (215) 563-4044
INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MOLECULE TYPE: PHYPOTHETICAL: NO ANTI-SENSE: NO ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CURRENT APPLICATION DATA:
APPLICATION NUMBER: US,
FILING DATE: 09-DEC-199
CLASSIFICATION: 435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NUMBER OF SEQUENCES: 4
CORRESPONDENCE ADDRESS:
1160 MKTKHECQNLESEPI-----RN----SVKERESERNQCNFKPQMDLEVKEISLDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ATTORNEY/AGENT INFORMATION:
NAME: REED, JANET E.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COMPUTER READABLE FORM:
                                                                                                           1115 TDNQNNSKSEAGGLKQEIMTLKE---EQNKMQKEVND-----LLQENEQLM-----KV 1159
                                                                                                                                                                                                                                                                                                                                                    1008
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TITLE OF INVENTION: AND METHODS OF
                                                    788 LSSKVE--NSPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRD- 845
                                                                                                                                                                                                                                                                                                                                                                                                              608 VDALKTCTCLLKECRLELAKCISNPACAANVACLQTCNNRPDETECQIKCGDLFENSVVD 667
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     943 ELQLLSET----LSLEKKEMSSIISLNKREIEELTQENGTLKEINASLNQEKMNLIQKSE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            429 ELQQDEENFVRELSKEEKEILNELQMEATEVEKLFGRALPIRKLRMALAPHS-NFLANHE 487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      883 QRISKLQEDTSAHQNVVAETLSALENKEKELQLLNDKVETEQAEIQELKKSNHLLEDSLK 942
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             381 ERLEKTAEE--GEKLLIKEAVEIEEEVEKEVEKVRD---TEMTLFORLL-----EGFK 428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STREET: 1001.
CTTY: PHILADELPHIA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TELEPHONE:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Match 1.5%; Score 112.5; i
Local Similarity 17.7%; Pred. No. 4.6;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TYPE: amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              REGISTRATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SOFTWARE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MEDIUM TYPE:
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                                                                                                                                                                     HEFHTEENKLYGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLYQDDWYI 787
                                                                                                                                                                                                                               FLTKLAFAEER----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TIKYYVGSKLPGHKRFSWGWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLF 547
                                                                                                                                                                                                                                                                                      EFNECAVSRKKCVPRKSDVGDFPVPDPSVLVQKFDMKDFSGKWFITRGLNPTFDAFDCQL 727
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -----AYEDLSQKYKA-A 1046
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SHGKHNLSPAHSINQNVPKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADA 607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           219;
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1601 MARKET STREET, SUITE 720
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PatentIn Release #1.0, Version
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (215) 563-4100
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                                                                                                                                                                                                                            -----LETVQQALRSEM 1114
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RESULT 14
PCT-US95-16216-1
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                                                                                                                                                                                                                                                                                                                    APPLICANT: Yen, Timothy J.

APPLICANT: Rattner, Jerome B.

TITLE OF INVENTION: Nucleic Acid Encoding a Transiently
TITLE OF INVENTION: Expressed Kinetochore Protein, and I
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1864 DIHNLQLRVKETSNENLRLLHVIEDRDRKVESLLNE 1899
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1372 DEENF --- VRELSKEEMEFLDEIKMEASEVEKLFGK 1404
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1806 TETGAVKPTGECSGEQSPDTNYEPPGEDKT--QGSSECISELSFSGPNALVPMDFLGNQE
                                                                                                                                                                                                                                                                           CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                       NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          994
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                                                                                                 COUNTRY: USA
ZIP: 19103-2307
                                                                                                                                                                                                                                                  ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TFIRTDNTCGPEPALVERIEK-----TVEEGERIIVKEVEEI----EEEVEKEVEKV 1351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ENECAVSRKKCVPRKSDLGEFPAPDPSVLVQNFNISDFNG-----KWYITSGLNPTFDA 1178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LPPIQSADLRTTGG-----RSSRPLSAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKL 1047
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              YNAQLVQLE - - - - - AMLRNKELKLQESE - - - - KEKECLQHELQTIRGDLETSNLQDMQ 1254
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        S--RSLLGIDTEDAIQGRNESCDISKEHTSETTERTPKHDVHQICDKDAQQDLNLDIEKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RQELDCLRKQYLSENEQWQQKLTSVTLEMESKLAAEKKQTEQLSLELEVARLQLQGLDLS 1747
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    KETPSAPAKGVEELESLCEVYRQSLEKLEEKMESQGIMKNKEIQELE-----QLLSS--E 1687
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SCVPDSSSLSSLGDSSFYRALLEQTGDMSLLSNLEGVVSANQCSVDEVFCSSLQEENLTR 1634
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ANQCSVDEVFCSSLQTYVDSLKAEN----LVLSTNLRNFQGDLVKEMQLGLEEGLVPSLSS 1574
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LVKEMQLGLEEGLVPSLSSSCVPDSSSLSSLGDSSFYRALLEQTGDMSLLSNLEGAV--S 1517
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SQEISGLKDCEIDAEEKYISGPHELSTSQNDNAHLQCSLQTTMNKLNELEKIC-EILQAE 1313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FNT-FIKTONTCGPEPPLVERLEKKVEEGERTIIKEVEEIEEEVEKVR-DKEVT----LF 898
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVL-----PNSIIPELEKAAKSI-GRDFS 1303
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                                                                                                                                                                                      Philadelphia
                                                                                                                                                             PA
                                                                                                                                                                                                                  E: Dann, Dorfman, Herrell and Skillman 1601 Market Street Suite 720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -----PACAANVACLQTCNNRPDETECQIKCGDL-----FENSVVDE 1124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -DCQLHEFHTE--GDNKLVGNISWRIK----TLDSGFFT------
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -EMTLFQRLAEGFNEL - - -
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TELECOMMUNICATION: INFORMATION:
TELEPHONE: (215) 563-4100
TELEPAX: (215) 563-4044
INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches
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APPLICATION NUMBER: US OF FILING DATE: 09-DEC-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 OPERATING SYSTEM: PC-DOS/MS-DOS SOFTWARE: Patentin Release #1.0, CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FILING DATE: 09-DEC-1995
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        HYPOTHETICAL:
ANTI-SENSE:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           883 QRISKLQEDTSAHQNVVAETLSALENKEKELQLLNDKVETEQAETQELKKSNHLLEDSLK 942
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Local Sir
hes 219;
949 KLMAVA-----THCFTS-----
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STRANDEDNESS: no
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LENGTH:
                                                     SQEISGLKDCE: DAEEKYISGPHELSTSQNDNAHLQCSLQTTMNKLNELEKIC - EILQAE 1313
                                                                                                                                                       YNAQLVQLE-----AMLRNKELKLQESE----KEKECLQHELQTIRGDLETSNLQDMQ 1254
                                                                                                                                                                                                                                                          MKTKHECQNLESEPI-----RN-----SVKERESERNQCNFKPQMDLEVKEISLDS 1205
                                                                                                                                                                                                                                                                                                        LSSKVE--NSPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRD- 845
                                                                                                                                                                                                                                                                                                                                                                 TDNQNNSKSEASGLKQEIMTLKE---EQNKMQKEVND------LLQENEQLM-----KV
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EFNECAVSRKKCVPRKSDVGDFPVPDPSVLVQKFDMKDFSGKWFITRGLNPTFDAFDCQL 727
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SHGKHNLSPAHSINQNVPKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADA 607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TIKYYVGSKLPGHKRFSWGWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLF 547
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                                                                                                   SKLFEGFKELQRD-EENFL---RELSKEEMD-----VLDGLKMEATEVEKLFGRALPIR 948
                                                                                                                                                                                                       FNT-FIKTONTOGPEPPLVERLEKKVEEGERTIIKEVEEIEEEVEKVR-DKEVT----LF
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Similarity 17.7%; Pred. No. 4.6;
19; Conservative 178; Mismatches
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---PCHDRIRFFSSDDGIGRLGITRKRINGTFLLKI 993
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S	; ZIP: 27707 ; COMPUTER READABLE FORM: ; MEDIUM TYPE: Diskette, 3.50 inch, 800 kB storage ; COMPUTER. TRM BC YYTAT Compatible	; STREE: HOULEVARD ; CITY: DURHAM ; STATE: NORTH CAROLINA ; COUNTRY: USA	SS:	APPLICABLE THOMPSON, MARILYN E. TITLE OF INVENTION: CHARACTERIZED BRCA1 AND BRCA2 TITLE OF INVENTION: PROTEINS AND SCREENING AND THERAPEUTIC METHODS BASED ON TITLE OF INVENTION: CHARACTERIZED BRCA1 AND BRCA2 PROTEINS. NUMBER OF SCHEMES. 29	PAGE, DAVID L. KING, MARY-CLAIRE SZABO, CSILLA I. JETTON, THOMAS L. ROBINSON-BENION, (5891857 FORMATION: T: HOLT, JEF	RESULT 15 US-08-603-753D-4 ; Sequence 4, Application US/08603753D	Db 1864 DIHNLQLRVKETSNENLRLLHVIEDRDRKVESLLNE 1899	1372 GRITTON AND THE STREET OF	1748	1251 NKPEDYIFVYYRGRNDAWDGYGGAVVYT : : : : : : :	1212 1635	Qy 1179 F DCQLHEFHTEGDNKLVGNISWRIKTLDSGFFT 1212 Db 1575 SCVPDSSSLSSLGDSSFYRALLEQTGDMSLLSNLEGVVSANQCSVDEVFCSSLQEENLTR 1634	QY 1125 FNECAVSRKKCVPKKSDLGEFPAPDPSVLVQNFNISDENGKWYITSGLNPTFDA 1178	QY 1088PACAANVACLQTCNNRPDETECQIKCGDLFENSVVDE 1124	Qy 1048 VGVLACAFLIVPSADAVDALKTCACLLKGCRIELAKCIAN 1088	Qy 994 LPPIQSADLRTTGGRSSRPLSAFRSGFSKGIFDIVPLPSKNELKELTAPLLIKL 1047	Db 1314 KYELVTELNDSRSECITATRKMAEEVGKLLNEVKILNDDSGLLHGE-LVED 1363
Qy 223 DFSGKWYITSGLNPTFDAFDCQLHEFHMENDKLVGNLTWRIKTLDG 268	Oy 173 IKCGDLFENSVVDQENECAVSRKKCVPRKSDVGEFPVPDRNAVVQNENMK 222	QY 113 LYCTFVIVPRYDAVDALKTCACLLKECRIELAKCIANPSCAANVACLQTCNNRPDETECQ 172	QY 60 KTSSFSDSSHCKDKSQICSIDTSFEEIQRFDLKRGMTLILEKQWRQFIQLAIV 112	3 LSLHTVFLCKEEALNLYA : :: 540 LEIHTVCSQKEDSL	Query Match 1.5%; Score 111.5; DB 2; Length 3418; Best Local Similarity 17.8%; Pred. No. 6.1; Matches 275; Conservative 212; Mismatches 576; Indels 483; Gaps 72	RELEVANT RESIDUES IN SEQ ID NO: 4: granin box RELEVANT RESIDUES IN SEQ ID NO: domain at amino acids 3334-3344 US-08-603-753D-4		t al. of the breast cancer	: LOCATION: 1 to 3418; Genbank locus HSU43746 ; IDENTIFICATION METHOD: ; OTHER INFORMATION: BRCA2 protein has a negative ; OTHER INFORMATION: regulatory effect on growth of human mammary cells	CELL LINE: HMEC ORGANELLE: no FEATURE: NAME/KEY: BRCA2 protein	L ISOLATE: NTAL STAGE: ad PE: female bre normal breas	HYPOTHETICAL: no ANTI-SENSE: no CRIGINAL SOURCE: CORGINAL	불 이 ,	INTELEX: INFORMATION FOR SEQ ID NO: 4: SEQUENCE CHARACTERISTICS: INNOCATH: 3418	REGISTRATION NUMBER: 39,395 REFERENCE/DOCKET NUMBER: 1242/2 TELECOMMUNICATION INFORMATION: TELEPHONE: (919) 493-8000	FILING DATE: 17 JAN 1995 ATTORNEY/AGENT INFORMATION: NAME: ARLES A. TAYLOR, JR.		CURRENT APPLICATION DATA:

59 SPYSVI	В
FENSVVDEFNECAV	Qy
 - - 	ρb
1074 LKGCRIELAKCIANPACAANVACLQTCNNRPDET-ECQIKC 1114	Qy
1014 SAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKLVGVLACAFLIVPSADAVDALKTCACL 1073	β δ _λ
-GTGNQLVTFQGQPERDEKIKEPTLLGFHTASGKKVKIAKESLDKVKNLEDEKEQGTSEI	B
973 DGIGRLGITRKRINGTELLKILPPIQSADLRTTGGRSSRPL 1013	δÃ
1466 LHSDIRKNKMDILSYEETDIVKHKILKESVPV	Дb
917 RELSKEEMDVLDGLKMEATEVEKLFGRALPIRKLMAVATHCFTSPCHDRIRFFSSD 972	Qy
1414 TEQNIKDFETSDTFFQTASGKNISVAKELFNKIVNFFDQKPEELHNFSLNSE 1465	Дb
VEEIEEEVEKVRDKEVTLFS	VQ.
1361 QHNICLKLSGQFMKEGNTQIKEDLSDLTFLEVAKAQEACHGNTSNKEQLTATK 1413	Дb
823 SAVLPESIIPELQTAAQKVGRDFNTFIKTDNTCGPEPPLVER 864	Qy
1311 ENYKRNTENEDNKYTAASRNSHNLEFDGSDSSKNDTVCIHKDETDLLFTD 1360	Дb
PKYPGILYNHDNEYLLYQDDWYILSSKVENSPEDYIFVYYKGRNDAWDGYGGS	Qy
1263SKCHDSVVSMFKIENHNDKTVSEKNNKCQLILQNNIEMTTGTFVEEIT 1310	Дb
706 FSGKWFITRGLNPTFDAFDCQLHEFHTEENKLVGNLSWRIRTFDGGFFTRSAVQKFV 762	δõ
1204 ASGYLTDENEVGFRGFYSAHGTKLNVSTEALQKAVKLFSDIENIS-BETSAEVHPISLSS 1262	Db
665VVDEFNECAVSRKKCVPRKSDVGDFPVPDPSVLVQKFDMKD 705	Qy
1150 TILKTTSEECRDADLHVIMNAPSIGQVDSSKQFEGTVEIKRKFAGLLKNDCNKS 1203	Dβ
609 DALKTCTCLLKECRLELAKCISNPACAANVACLQTCNNRPDETECQIKCGDLFENS 665	Qy
555 SPAHSINQNVPKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADAV 608	B 8
1070 AHLQSSVVVSDCKNSHITPQMLFSKQDFNSNHNL 1103	Db
499 GHKRFSWGWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGKHNL 554	VΩ
1015 KEIKLSEHNIKKSKMFFKDIEEQYPTSLACVEIVNTLALDNQKKLSKPQSINTVS 1069	Db
EKEI-	Qy
956 KNSVK-QHIKMTLGQDLKSDISLNIDKIPEKNNDYMNKWAGLLGPISNHSFGGSFRTASN 1014	Дb
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752 DFQSQKSLLYDHENASTLILTPTSKDVLSNLVMISRGKESYKMSDKLKGN 802	Ф

Search completed: October 14, 1999, 00:47:04 Job time: 755 sec

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GenCore version 4.5

Copyright (c) 1993 - 1998 Compugen Ltd.

OM nucleic - nucleic search, using sw model

Run on: October 14, 1999, 00:43:08; Search time 83.2 Seconds (without alignments)
1944.561 Million cell updates/sec

Title: US-09-075-375-5

Perfect score: 1555
Sequence: 1 1555
Sequence: 1 10ENTITY_NUC

Searched: 192659 seqs, 52021692 residues

Database: Issued_Patents_NA:*
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6: /cgn2_6/ptodata/1/ina/DacVBLseq:*
7: /cgn2_6/ptodata/1/ina/Da
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

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112 113 114 115 116 117 117 117 117 117 117 117 117 117	7 10 11	54321	Result
	0.0000000000000000000000000000000000000	92.4 43.6 43.6 43.6	Score
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US-07-864-004B-3 US-08-251-937A-3 US-08-271-937A-3 US-08-474-503-1 US-08-474-503-1 US-08-67-707A-1 PCT-US93-03275-3 PCT-US94-13200-1 US-08-31-7 US-08-31-7 US-08-31-7 US-08-31-7 US-08-145-705A-1 US-08-145-705A-1 US-08-145-705A-2 US-08-483-27-66A-9 US-08-483-25-324 US-08-483-554B-24 US-08-483-554B-24 US-08-488-011B-24 US-08-488-011B-24 US-08-488-0120-24 US-08-489-099-1 PCT-US95-10203-24 PCT-US95-10203-24 PCT-US95-10203-24 PCT-US95-10203-24 US-08-372-652-8 PCT-US94-12912-3	-08-728-323A -08-323-170B -07-865-662F -08-332-766A -07-915-246- T-US94-10080	-232-463-1 -676-967-2 -676-974-2 -098-487-2 -770-379-2	ID
Sequence 3, Appli sequence 1, Appli sequence 1, Appli sequence 1, Appli sequence 1, Appli sequence 2, Appli sequence 103, App sequence 103, App sequence 103, Appli sequence 1, Appli sequence 2, Appli sequence 2, Appli sequence 24, Appli sequence 3, Appli sequence 3, Appli	equence 1, App equence 1, App equence 10, Ap equence 22, Ap equence 1, App equence 5, App	oquence 14, Appiquence 2, Appiquence 2, Appiquence 2, Appiquence 2, Appiquence 20, Description	

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1116 acggataacac&tgtggtcctgaacctgcgctcgtggagagaattgagaagacagtggaa 1175

4 6 2 1 D St. VI 350 St. VI 360 S	P-US93-07261-10 -08-072-610-1 -08-454-115-4 ALIGNMENTS ALIGNMENTS ALIGNMENTS Suite 500 Suite 500 Suite 500 #1.0, Version #1.25 32,463 35,313 14 300.6 14 300.6 14 300.6 14 300.6 172/114 IMMU 472/114 IMMU 472/114 IMMU	S93-07261-10 -072-610-1 -454-115-4 IGNMENTS FOWLPOX VIRUS FOWLPOX VIRUS FOWLPOX VIRUS 10, Version #1.2 10, Version #1.2 10, Version #1.2 11, No. 92.4; DB 2; 10, 10, 10, 10, 10, 10, 10, 10, 10, 10,	Query Match 5.9%; Score Best Local Similarity 3.1%; Pred. Matches 12; Conservative 255; Mi	; INFORMATION FOR SEQ ID NO: 14: ; SEQUENCE CHARACTEFISTICS: ; LENGTH: 7218 base pairs TYPE: nucleic acid ; STRANDEDNESS: single ; TOPOLOGY: linear ; IMMEDIATE SOURCE: ; CLONE: pTZgpt-F1s US-08-232-463-14	APPLICATION NUMBER: EP 91 114 FILING DATE: 26-AUG-1991 ATTORNEY/AGENT INFORMATION: NAME: BENT, Stephen A. REGISTRATION NUMBER: 29,768 REFERENCE/DOCKLY NUMBER: 3047 TELECOMMUNICATION: INFORMATION: TELEPHONE: (703)836-9300 TELEPHONE: (703)837-4109 TELEFX: 899149	CURRENT APPLICATION NOMBER: US/08/232,4 APPLICATION NUMBER: US/08/232,4 FILING DATE: CLASSIFICATION: 435 PRIOR APPLICATION NUMBER: US/07/935,3 FILING DATE: CLASSIFICATION US/07/935,3	CITY: Alexandria STATE: VA COUNTRY: USA ZIP: 22313-029 COMPUTER READABLE FORM: MEDIUM TYPE: Floppy d COMPUTER: IBM PC COMP	PATENT NO. 5670367 GENERAL INFORMATION: APPLICANT: DORNER, F. APPLICANT: SCHEIFLINGER, F. APPLICANT: FALKLER, F. G. TITLE OF INVENTION: RECOMBINAN NUMBER OF SEQUENCES: 52 CORRESPONDENCE ADDRESS: ADDRESSEE: FOLGO D. J. GODNAL ROAD, STREET: 1800 D. J. GODNAL ROAD,	ion US/082324	43 33.6 2.2 4766 5 PCT-U 44 33 2.1 3337 1 US-OG 45 33 2.1 1242 3 US-OG
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                                                                                                                                                                                                                      TELEFAX: (415)343-4342
INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARACTERISTICS:
LENGTH: 2277 base pairs
TYPE: nucleic acid
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                                                                                                       Ouery Match 2.8%; Score 43.6; DB 2; Length 2277; Best Local Similarity 25.9%; Pred. No. 0.0019;
                                                                                                                                                                                                                                                                    REGISTRATION NUMBER: UCB9-
REFERENCE/DOCKET NUMBER: UCB9-
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415)343-4341
TELEFAX: (415)343-4342
TELEFAX: (415)343-4342
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ATTORNEY/AGENT INFORMATION:
NAME: Osman Ph.D., Richa
                                                                                                                                                                                                                                                                                                                                                                                                                                       MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
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                                 226 ACNGTNGCNAARAARAARYTNMGNAAYAARACNAARGARAARGGNAARAAYGARAAYWSN 285
                                                          756 acagaaggtgacaacaagcttgttggaaacatctctttggagaataaagaccctagacagt 815
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                                                                                                                                                                                                                TYPE: nucleic
STRANDEDNESS:
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                                                                                                                                                                                                                                                                                                                                                                                              CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ADDRESSEE: Science & Technology Law Group STREET: 268 Bush Street, Suite 3200
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                                US-08-676-974-2
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                                              MOLECULE TYPE:
                                                          TOPOLOGY:
                                                                                         TYPE:
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                                                                                                  LENGTH:
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Sequence 2, Application US/08676974 Patent No. 5770422
                                                                                                                              TELEFAX: (415)343-4342
INFORMATION FOR SEQ ID NO: 2:
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                                                                           SEQUENCE CHARACTERISTICS:
LENGTH: 2277 base pairs
                                                                                                                                                                                                               REFERENCE/DOCKET NUMBER: UC TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                  ATTORNEY/AGENT INFORMATION:
NAME: Osman Ph.D., Richard A
REGISTRATION NUMBER: 36,627
                                                                                                                                                                                                                                                                                                                                                                                                                          SOFTWARE: Patentin Release #1.0, Version #1.30 CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COMPUTER READABLE FORM: MEDIUM TYPE: Floppy
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1236 gtggagaaggtcggtaggactgagatgaccttgttccagagattggctgaag 1287
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
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                STRANDEDNESS: double
                                                                                                                                                                                                                                                                                                                                              FILING DATE:
CLASSIFICATION.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CITY: San Francisco
STATE: CA
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                                               nucleic acid
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linear
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Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 2, Application US/09098487 Patent No. 5917025
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matches 138;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GENERAL INFORMATION:
TELEFAX: ('INFORMATION FOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT: COLLINS, Kathleen
TITLE OF INVENTION: Human Telomerase
NUMBER OF SEQUENCES: 11
CORRESPONDENCE ADDRESS:
ADDRESSEE: Science & Technology Law Group
STREET: 268 Bush Street, Suite 3200
                                          REFERENCE/DOCKET NUMBER: UC:
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415)343-4341
                                                                                                    ATTORNEY/AGENT INFORMATION:
NAME: Osman Ph.D., Richard A
REGISTRATION NUMBER: 36,627
                                                                                                                                                                                                                  COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/098,487
                                                                                                                                                                                                                                                                                                                                  COMPUTER READABLE FORM: MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       526 ATGAARGARATHAARGGNMGNACNGTNGCNGTNGAYTGGGCNGTNGCNAARGAYAARTAY 585
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                                                                                                                                                                                                                                                                                                                                                                                                                           STREET: 200 - CITY: San Francisco
                                                                                                                                                                            CLASSIFICATION:
                                                                                                                                                                                                    FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                              COUNTRY: UZIP: 94104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         gaaggtgaaaggataatcgtaaaagaggttgaagagagaagaagaagaggtagaggaa 1235
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                                                                                                                                                                                                                                                                                                                                                                                                      USA
                  (415)343-4342
SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                Floppy disk
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                                                                                        UCB96-055
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; MOLECULE TYPE: US-09-098-487-2
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Best Local Similarity
                                                                                                                                                                                                                                                                           Sequence 20, Application US/08770379 Patent No. 5849564
                                                                                                                                                                                                                                                             GENERAL INFORMATIOM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE CHARACTERISTICS:
LENGTH: 2277 base pairs
                                                                      APPLICANT: ..... POLYPERTICN: POLYPERTICS: TITLE OF INVENTICN: HERPESVIRUS,
                                                           CORRESPONDENCE ADDRESS:
                                                                                                                                                  APPLICANT: Edelman, Isidore S. APPLICANT: Moore, Patrick S.
                                                                                                                                                                      APPLICANT:
                                                                                                                                                                                                                APPLICANT: Chany, Yuan APPLICANT: Bohenzky, R
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CITY: New York
                    STREET:
                                      ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GAYGAYGAYGAYGAYGARGARGAYGGNGTNTTYGAYGAYGARGAYGARG
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                    1185 Avenue of the Americas
                                                                                                                                                                                                                  Bohenzky, Roy A.
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                                                                                                                                                                                             Russo, James
                                         Cooper & Dunham LLP
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25.9%; Pred. No. 0.0019;
                                                                                                      POLYPEPTIDES FROM KAPOSI'S SARCOMA-ASSOCIATED HERPESVIRUS, DNA ENCODING SAME AND USES THEREOF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB 4;
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COMPUTER READABLE FORM: MEDIUM TYPE: Floppy

COMPUTER:

E: Floppy disk IBM PC compatible STATE: New York COUNTRY U.S.A. ZIP: 10036

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LENGTH: 32207 base pairs
TYPE: nucleic acid
STRANDEDNESS: double
TOPOLOGY: linear
MOLECULE TYPE: DNA (genomic)
US-08-770-379-20
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                               GENERAL INFORMATION:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TELEFAX: (212) 391-0525
INFORMATION FOR SEQ ID NO: 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        20663 AGGAGCCACAACAGCAGGAGCCAC 20640
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy of COMPUTER: IBM PC componerating SYSTEM: PC
                                                                                                                                                                                 CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                APPLICANT: MOORE, Patrick S.
TITLE OF INVENTION: Immediat
TITLE OF INVENTION: Sarcoma-
TITLE OF INVENTION: Encoding
NUMBER OF SEQUENCES: 21
                                                                                                                                                                                                                                                                        APPLICANT: APPLICANT:
                                                                                                                                                                                                                                                                                                        APPLICANT:
                                                                                                                                                                                                                                                                                                                                              APPLICANT:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NAME: White, John P.
REGISTRATION NUMBER: 28,678
REFERENCE/DOCKET NUMBER: 523
TELECOMMUNICATION INFORMATION:
TELEPHONE: (212) 278,0400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE CHARACTERISTICS:
LENGTH: 32207 base pair
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                                                                                                       STATE: New York
                                                                         COUNTRY: U
ZIP: 10036
                                                                                                                                               STREET:
                                                                                                                                                              ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICATION NUMBER: FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACGAGGAGGACGGGGGGGATGGAAACAAAACGTTGAGCATCCAAAGTTCACAACAGCAGC 20664
                                                                                                                                                                                                                                                                                                                                                                                   , Application US/08728323A 5948676
                                                                                                           New York
                                                                                                                                           E: Cooper & Dunham LLP
1185 Avenue of the Americas
                                                                                        U.S.A.
                                                                                                                                                                                                                                                                                                        Bohenzky, Roy A.
Russo, James J.
                                                                                                                                                                                                                                                                                       Edelman, Isidore S.
                                                                                                                                                                                                                                                                                                                                              Chang, Yuan
IBM PC compatible
SYSTEM: PC-DOS/MS-DOS
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                              Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2.8%;
47.7%;
                                                                                                                                                                                                                   Encoding Same And Uses Thereof
                                                                                                                                                                                                                              Immediate Early Protein From Kaposi's Sarcoma-Associated Herpesvirus, DNA
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                                                                                                                                                                                                                                                                                                                                                                                   Sequence 1, Application US/08323170B Patent No. 5733772
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ouery Match
Best Local Similarity
Matches 126; Conserv
                                                                                                                                                                                                                                                                                                                                       GENERAL INFORMATION:
APPLICANT: Williamson, Kim C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TELEFAX: 212-391-0525
INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
            COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0,
                                                                                                                                                                                                                                                APPLICANT: Williamson, Kim C.
APPLICANT: Waslow, David C.
APPLICANT: Kaslow, David C.
TITLE OF INVENTION: Cloning and Expression of Plasmodium
TITLE OF INVENTION: faliciparum Transmission-Blocking Target Antigen, Pfs230
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                         CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1274 ACGAGGAGGACGGGGGCGATGGAAACAAAACGTTGAGCATCCAAAGTTCACAACAGCAGC 1333
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1214 ATGACGATGATGAGGACAATGAGGACGAGGAGGATGACGAGGAGGAGGACAAGAAGGAGG 1273
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1334 AGGAGCCACAACAGCAGGAGCCAC 1357
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1318 atttcgtgagagagttaagtaaagaagagatggagtttttggatgagatcaaaatggaag 1377
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1258 agatgaccttgttccagagattggctgaaggatttaatgaactgaagcaagacgaggaga 1317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1094 ACGAGGAGGATGACGAGGATGACGAGGATGACGAGGATGACGAGGATGACGAGGAGGATG 1153
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MOLECULE TYPE: DNA (genomic) FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TELECOMMUNICATION INFORMATION:
TELEPHONE: 212-278-0400
TELEFAX: 212-391-0525
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CLASSIFICATION:
ATTORNEY AGENT INFORMATION:
NAME: White, John P. 28,678
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SOFTWARE: PatentIn Release #1.0, Version #1.30 CURRENT APPLICATION DATA:
                                                                                                                                                                              STREET: Two Embarcac
CITY: San Francisco
                                                                                                                                       COUNTRY:
                                                                                                                                                               STATE:
                                                                                                                                                                                                                      ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICATION NUMBER: US/08/728,323A FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TOPOLOGY:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ENGTH:
                                                                                                                      94111-3834
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                : 3489 base pairs
                                                                                                                                                           California
                                                                                                                                                                                               Two Embarcadero Center, 8th Floor
                                                                                                                                          USA
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 43.2; DB 4; Length 3489; Pred. No. 0.0033; 0; Mismatches 138; Indels 0
              Version #1.30
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US-07-865-662F-10/c
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REFISTRATION NUMBER: P-41,261
REFERENCE,DOCKET NUMBER: 015280
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 576-0200
TELEPEAX: (415) 576-0300
INFORMATION FOR SEQ ID NO: 1:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local Similarity
Matches 102; Conserv
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                                                                                                                                                                                                                                                                                                                                                GENERAL INFORMATION:
APPLICANT: Marcia M. Miller
TITLE OF INVENTION: Restriction Fragment Length
TITLE OF INVENTION: Polymorphism Test For Haplotyping Domesticated Fowl
NUMBER OF SEQUENCES: 14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FEATURE:
NAME/KEY:
LOCATION:
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ATTORNEY/AGENT JONATHAN A.

Ouine, Jonathan A.

P-4
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APPLICATION NUMBER: US 08/010,409
FILING DATE: 29-JAN-1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1478 TATGTAGATGAAAAAGAAAGGCAAG 1502
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1233 gaagtggagaaggtcggtaggactgagatgaccttgttccagagattggctgaaggattt 1292
                 SOFTWARE: Microsoft
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/07/865,662F
FILING DATE: 07 April, 1992
CLASSIFICATION: 435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1293 aatgaactgaagcaagacgaggagaatttcgtgagagagttaagtaaagaagagatggag 1352
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1298 GAGGTAGGTGAAGAGGTAGGTGAAGAGGTAGGTGAAGAGGTAGGTGAAGAGGTGAA 1357
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                                                                                                                                                                                   COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                    CORRESPONDENCE ADDRESS:
ADDRESSEE: City of Hope
STREET: 1500 East Duarte Road
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LENGTH: 9636 base pairs
TYPE: nucleic acid
STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICATION NUMBER: FILING DATE: 13-OC
                                                                                                                                                                                                                                                                STREET: 1500
CITY: Duarte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CLASSIFICATION:
                                                                                                                  MEDIUM TYPE: 3M Double Density 5 1/4" diskette COMPUTER: Wang PC OPERATING SYSTEM: MS DOS Version 3.20
                                                                                                                                                                                                      COUNTRY: United States of America ZIP: 91010-0269
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TOPOLOGY:
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APPLICATION DATA:
                                                                                                                                                                                                                                               California
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MOLECULE TYPE: DNA
ORIGINAL SOURCE: Synthetically Prepared
IMMEDIATE SOURCE: Synthetically Prepared
US-07-865-662F-10
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Patent No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 22, Application US/08332766A Patent No. 5843647
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Best Local Similarity Matches 63; Conserv
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GENERAL INFORMATION:
                                                                                                                     COMPUTER: IBM PC COMPATIBLE
OPERATING SISTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/332,766A
FILING DATE: 01-NOV-1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ATTORNEY/AGENT INFORMATION: NAME: Irons, Edward S.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FILING DATE: 22 April 1991
APPLICATION NUMBER: 07/588,922
FILING DATE: 37 September 1990
APPLICATION NUMBER: 07/210,405
FILING DATE: 23 June 1988
APPLICATION NUMBER: US 07/130,529
FILING DATE: 5 December 1987
APPLICATION NUMBER: US 07/068,176
FILING DATE: 30 June 1987
                                                                                                                                                                                                                                                                                                                                                                                                          TITLE OF INVENTION: SIMPLE TANDEM REPEATS NUMBER OF SEQUENCES: 125
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1208 agagatagaagaggtagagaagggaagttggagaaggtttggt 1250
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1148 cgtggagagaattgagaaagacagtggaaggatgaaaggataatcgtaaaagaggttga 1207
                                  PRIOR APPLICATION DATA:
APPLICATION NUMBER: GB 9326052.9
FILING DATE: 21-DEC-1993
                                                                                                                                                                                                                                                                 COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT: JEFFREYS, Ala
APPLICANT: ARMOUR, John
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TELECOMMUNICATION INFORMATION:
ATTORNEY/AGENT INFORMATION: NAME: BIRD, Donald J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                184 CGAGAAGAGCAAGAAGAAGAAGAAGAAGAAGAAGATGAGGACGAAGACGAAGAGGATGA 125
                                                                                                                                                                                                                                                                                                                                            STREET: 1100 New CITY: Washington
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STRANDEDNESS: Dou
TOPOLOGY: Linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NAME: Irons, Edward S. REGISTRATION NUMBER: 16,541 REFERENCE/DOCKET NUMBER: No.
                                                                                                  CLASSIFICATION: 435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TELEFAX:
                                                                                                                                                                                                                                                                                                          COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TELEPHONE: (202) 783-6040
TELEFAX: (202) 783-6031
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICATION NUMBER:
                                                                                                                                                                                                                                           MEDIUM TYPE:
                                                                                                                                                                                                                                                                                                                                 STATE:
                                                                                                                                                                                                                                                                                                                                                                                         ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LENGIH:
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                                                                                                                                                                                                                                                                                                     D. C.
                                                                                                                                                                                                                                                                                        20005-3918
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                                                                                                                                                                                                                                                                                                                                                                      1100 New York Avenue, N.W
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           JEFFREYS, Alec J.
                                                                                                                                                                                                                                                                                                                                                                                         CUSHMAN DARBY & CUSHMAN, L.L.P
                                                                                                                                                                                                                                           Cloppy disk
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Pred. No. 0.045;
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; MOLECULE TYPE: US-08-332-766A-22
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    REGISTRATION NUMBER: 32,167
REFERENCE/DOCKET NUMBER: 91 P 1125
REFERENCE/DOCKET NUMBER: 91 P 1125
RELECOMMUNICATION INFORMATION:
TELEPHONE: 312 707-8889
TELEPHONE: 312 707-9155
INFORMATION FOR SEQ ID NO: 1:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GENERAL INFORMATION:
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TELEX: 6714027 CUSH
TINFORMATION FOR SEE ID NO: 22:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                          COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                 ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                               CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: Baszczynski, Chris L. APPLICANT: Fallis, Lynne APPLICANT: Bellmare, Guy APPLICANT: Boivin, Rodolphe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT: Boivin, Rodolphe
TITLE OF INVENTION: A BRASSICA REGULATORY SEQUENCE FOR
TITLE OF INVENTION: ROOT-SPECIFIC OR ROOT-ABUNDANT GENE EXPRESSION
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TELECOMMUNICATION INFORMATION:
TELEPHONE: (202) 861-3000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NUMBER OF SEQUENCES:
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                                                                                                                                                                                                                                                              COMPUTER: IBM PC
OPERATING SYSTEM:
                                                                                                                                                                                       APPLICATION NUMBER: US
FILING DATE: 19920716
                                                                                                                                                                      CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LENGTH: 494 base pairs TYPE: nucleic acid STRANDEDWESS: single
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:: Illinois
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                                                                                                                                                                                                                                                                                                                                                                                                                              500 W. Madison St. 34th Floor
                                                                                                                                                                                                                                                                                                                                                                          USA
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                                                                                                                                                                                                                                                  PatentIn Release #1.0, Version #1.25
                                                                                                                                                                                                                                                                                       IBM PC compatible
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                                                                                                                            Donald
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Pred. No. 0.025;
0; Mismatches 99;
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Best Local Similarity 46.4%;
Matches 124; Conservation
ATTORNEY/AGENT INFORMATION:
NAME: LAZAR, Steven R
REGISTRATION NUMBER: 32,618
REFERENCE/DOCKET NUMBER: 52
TELECOMMUNICATION INFORMATION:
                                                                                                                     PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 0
FILING DATE: 17-SEP-1993
                                                                                                                                                                                                                                           SOFTWARE: PatentIn Release #1.0, Version #1.25 CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                            COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NUMBER OF SEQUENCES: 1
CORRESPONDENCE ADDRESS:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TITLE OF INVENTION
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LENGTH: 1505 base pairs
TYPE: NUCLEIC ACID
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                925 GTGGAGGAAGCGGAGGAGGTGGTGGTGGAGGAGCTGGCGGTGCGCATGGTGGTGGATACG 984
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                                                                                                                                                                                                                                                                               COMPUTER: IBM PC
OPERATING SYSTEM:
                                                                                                                                                                                                                                                                                                                                                                                                                    STREET: 8/ Cambridge
                                                                                                     CLASSIFICATION:
                                                                                                                                                                                  CLASSIFICATION:
                                                                                                                                                                                                       FILING DATE:
                                                                                                                                                                                                                        APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                           MEDIUM TYPE:
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TISSUE TYPE: Root
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STRAIN: Westar
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87 CambridgePark Drive
                                                                                                                                                                                                                                                                                                                                                                                      USA
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IBM PC compatible
SYSTEM: PC-DOS/MS-DOS
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                                                                                                                                          US 08/123,934
                                       32,618
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us-07-915-246-1

SOFTWARE:

COUNTRY:

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TELEFAX: (617) 876-8551
INFORMATION FOR SEQ ID NO: 5:
SEQUENCE CHARACTERISTICS:
LENGTH: 3238 base pairs
                                                                                                        NAME: Pabst, Patrea L.
REGISTRATION NUMBER: 31,284
REFERENCE/DOCKET NUMBER: EMU1
TELECOMMUNICATION INFORMATION:
TELEPHONE: 404-815-6508
TELEPAX: 404-815-6555
                                                                                          TELEFAX: 404-815-6555
INFORMATION FOR SEQ ID NO: 3:
                                                                                                                                                                                                                       SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/07/864,004B
FILING DATE: 07 APRIL 1992
CLASSIFICATION: 435
CCLASSIFICATION: 435
CCLASSIFICATION: 435
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                                                                                                                                                                                                                                                                                                                                          COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TITLE OF INVENTION: Hybrid Human/Porcine Factor VIII NUMBER OF SEQUENCES: 6
CORRESPONDENCE ADDRESS:
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MOLECULE TYPE:
                                                                             SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                       COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS SOFTMARE: PatentIn PC-10-1
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Local Similarity 54.5%;
nes 73; Conservative
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LOCATION:
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                             STRANDEDNESS:
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                                                             9009 base pairs
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Patent No. 5583209
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Best Local Similarity 46.0%;
Matches 121; Conservative
                 COMPUTER: IBM_PC COMPATIBLE
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Ve
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/251,937A
FILLING DATE: 31-MAY-1994
CLASSIFICATION: 435
PRIOR APPLICATION 435
PRIOR APPLICATION UMBER: US 07/864,004
FILLING DATE: 07-APR-1992
                                                                                                                                                                                                                                                                                                                                                                                                                                                   GENERAL INFORMATION:
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TISSUE TYPE:
FEATURE:
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                                                                                                                                                                                                       COMPUTER READABLE FORM: MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT: Lollar, John S. APPLICANT: Runge, Marschall S.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8224 AAAATAACACAACAAAAATGTAA 8246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1472 atactgtgttcggttcatataaagtaatatttttgtacacagtcatcatcattccataac 1531
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FRAGMENT TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          HYPOTHETICAL:
ANTI-SENSE:
                                                                                                                                                                                                                                                                                                                                                        CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                              TITLE OF INVENTION: Hybrid Human/Porcine Factor VIII NUMBER OF SEQUESICES: 10
ATTORNEY/AGENT INFORMATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NAME/KEY: misc_feature (Domain Structure)
LOCATION: 5001 . . 7053
OTHER INFORMATION: /note- "Equivalent to
OTHER INFORMATION: domain"
                                                                                                                                                                                                                                              COUNTRY: U
ZIP: 30309
                                                                                                                                                                                                                                                                                 CITY: Atlanta
STATE: Georgia
                                                                                                                                                                                                                                                                                                                    ADDRESSEE: Kilpatrick & Cody
STREET: 1100 Peachtree Street
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        gccaatcaygaaygtcaggtagaaacaagaaccaccattgttgtacaaactatattatac 1471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    aattggataaaaaaaaaaaaaa 1554
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAACTTTGTAATTCTAATAATGCACTCAGTTTACTCTCTCCCCTCTACTAATTTCCTGCTG 8223
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                                                                                                                                                                                                                                                                                 Georgia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Application US/08251937A
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                                                                                                                                                                                                       Floppy disk
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note= "Equivalent to the Al-A2 domain"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /note= "Equivalent to the A3-C1-C2
                                                                                                              US/08/251,937A
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                                                                                                                                                     Version #1.25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DB
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NAME: Pratt, John S.
REGISTRATION NUMBER: 29,476
REFERENCE/DOCKET NUMBER: EM

EMU106DIV

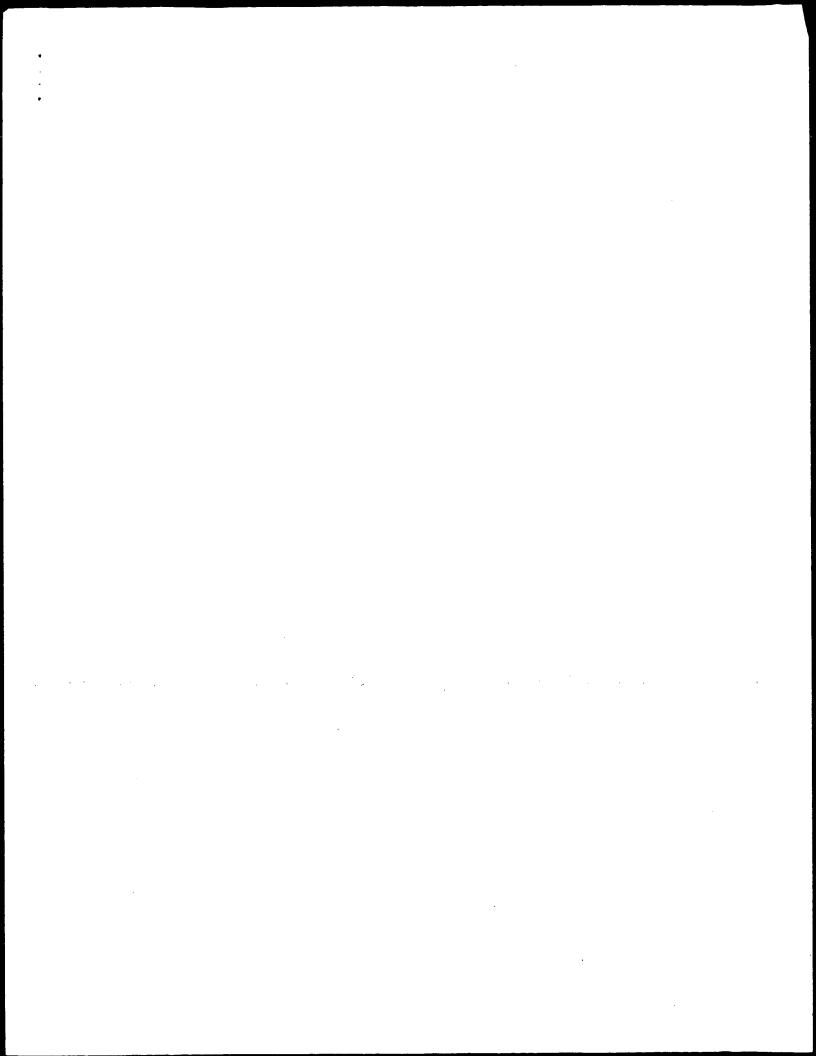
COMPUTER READABLE FORM:

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                                                                                                                                                                                                        Sequence 1, Application US/08212133A Patent No. 5663060
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Matches
                                                                                                                                GENERAL INFORMATION:
APPLICANT: Lollar, John S.
APPLICANT: Runge, Marschall S.
TITLE OF INVENTION: Hybrid Hum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
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                                                                                 NUMBER OF SEQUENCES: 12
CORRESPONDENCE ADDRESS:
ADDRESSEE: Kilpatrick & Cody
                                                                                                                                                                                                                                                                                                                               1292 taatgaactgaagcaagacgaggagaatttcgtgagagagttaagtaaagaagagatgga 1351
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COUNTRY: UZIP: 30303
                                                                  STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LOCATION: 1 ... 2277
OTHER INFORMATION: /note= "Equivalent to the A1-A2
OTHER INFORMATION: domain"
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                                  STATE:
                                                      CITY:
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                                                  Atlanta
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                  Georgia
7: US
                                                                  100 Peachtree Street
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1 . . . 2277
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5001 . . . 7053
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NO
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46.0%;
                                                                                                                                   Hybrid Human/Animal Factor VIII
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OTHER INFORMATION:
US-08-212-133A-1
                                                                                                                                                                                                                                                                                                                                                                                Matches
                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TELEFAX: 404-572-6555
INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                1292 taatgaactgaagcaagacgaggagaatttcgtgagagagttaagtaaagaagagatgga 1351
8224 AAAATAACACAACAAAAATGTAA 8246
                               1532 aattggataaaaaaaaaaaaa 1554
                                                                                                      1472 atactgtgttcggttcatataaagtaatatttttgtacacagtcatcatcattccataac 1531
                                                                                                                                                                                                                         8044 CTTGAAATTTGTGATGGCCAAGAAAAGAAAATGATGATGACATTAGGCTTCTAAAGGACAT 8103
                                                                                                                                                                                                                                                           1352 gtttttggatgagatcaaaatggaagcaagtgaggttgaaaaattgtttgggaaagcttt 1411
                                                                                                                                                                                                                                                                                               7984 TAAAAAAATAAGTCAGGAGGATGCAATTGTTGAAAGCTTTGAAATAAAATAACATGTCTT 8043
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           OTHER INFORMATION: OTHER INFORMATION: FEATURE:
                                                                                                                                              8104 ACATTTAATATTTCTGTGGAAATATGAGGAAAATCCATGGTTATCTGAGATAGGAGATAC
                                                                                                                                                                                  1412 gccaatcaggaaggtcaggtagaaacaagaaccaccattgttgtacaaactatattatac 1471
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TELEPHONE: 404-572-6508
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FILING DATE: 07-APR-1992
ATTORNEY/AGENT INFORMATION:
NAME: Pabst, Patrea L.
REGISTRATION NUMBER: 31,284
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SOFTWARE: Patentin Release #1.0, Version #1.25 CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    OTHER INFORMATION: FEATURE:
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PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                               Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LOCATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NAME/KEY:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ORGANISM: Homo sapien
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LENGTH:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MEDIUM TYPE: Floppy disk
                                                                         AAACTTTGTAATTCTAATAATGCACTCAGTTTACTCTCTCCCCTCTACTAATTTCCTGCTG
                                                                                                                                                                                                                                                                                                                                                                              121;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          nucleic acid
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                                                                                                                                                                                                                                                                                                                                                                              Conservative
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5125 . . . 7053
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /note= "cDNA encoding human factor VIII."
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                                                                                                                                                                                                                                                                                                                                                                                                               DB 2;
                                                                                                                                                                                                                                                                                                                                                                              142;
                                                                                                                                                                                                                                                                                                                                                                                                             Length 9009;
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; NAME/KEY: Domain
; LOCATION: 1..2277
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Patent No. 5744446
GENERAL INFORMATION:
APPLICANT: Emory University
TITLE OF INVENTION: Hybrid Human/Animal Factor VIII
NUMBER OF SEQUENCES: 12
                                                                                                                                                                                                                                 Query Match
Best Local :
                                                                                                                                                                                                              Matches
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ATTORNEY/AGENT INFORMATION:
NAME: Pratt, John S.
REGISTRATION NUMBER: 29,476
REFERENCE/DOCKET NUMBER: EMUI
TELECOMMUNICATION INFORMATION:
TELEPHONE: 404-815-6500
TELEPHONE: 404-815-6500
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INFORMATION FOR SEQ ID NO: 1:
                                                                                                                                                1292 taatgaactgaagcaagacgaggagaatttcgtgagagagttaagtaaagaagagatgga 1351
1412 gccaatcaggaaggtcaggtagaaacaagaaccaccattgttgtacaaactatattatac 1471
                                        8044 CTTGAAATTTGTGATGGCCAAGAAAGAAATGATGATGATGACATTAGGCTTCTAAAGGACAT 8103
                                                                7984 TAAAAAAATAAGTCAGGAGGATGCAATTGTTGAAAAGCTTTGAAAATAAAATAACATGTCTT 8043
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MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
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CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FEATURE:
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                                                                                                                                                                                                            Local Similarity
mes 121; Conserv
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LENGTH: 9009 base pairs TYPE: nucleic acid STRANDEDNESS: single TOPOLOGY: linear
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                                                                                                                                                                                                                                                                                                                                                                                                                                     OTHER INFORMATION: /note= "Equivalent to the Al-A2 domain."
                                                                                                                                                                                                                                                                                                                                                                                                                                                             NAME/KEY: misc_feature (Domain Structure) LOCATION: 1 . . . 2277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NAME/KEY: misc_feature (Domain Structure) LOCATION: 5125 7053
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FILING DATE: 07-JUN-1995
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46.0%; Pred. No. 0.91;
Vative 0; Mismatches 142; Indels 0
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Search completed: October 14, 1999, 00:43:45 Jcb time: 3481 sec



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3: /cgn2_6/ptodata/1/iaa/pcTUS9_COMB.pep:*
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US-08-460-309-2

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US-08-125-077-4

US-08-353-700-1

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                                                      Query Match
Best Local Similarity
Matches 139; Conserv
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                                                                                                                                                                                                                         TELEFAX: 404/688-9880
INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
LENGTH: 776 amino acids
TYPE: AMINO ACID
                                                                                                                                                                                                                                                                                                                                                                                             ATTORNEY/AGENT INFORMATION:
NAME: Spratt, Gwendolyn D.
REGISTRATION NUMBER: 36,016
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: Nichols, Peter J
APPLICANT: Arora, Naveen
APPLICANT: Singh, Yogendra
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CURRENT APPLICATION DATA:
APPLICATION NUMBER: US
FILING DATE: 19930212
                                                                                                                                                                                                                                                                                                                                                      TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CORRESPONDENCE ADDRESS:
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CITY: 1
STATE:
733 EENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHD---NEYLLYQDDWY--I 787
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                             CLASSIFICATION:
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                                                      1.8%; Score 132; DB 1; Length 776; ilarity 17.2%; Pred. No. 0.0098; Conservative 117; Mismatches 254; Indels 3
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                                                             Indels 300;
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; Sequence 2, Application US/08082849B
; Patent No. 5677274
; GENERAL INFORMATION:
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                                                                                                        APPLICANT: Arora, Naveen
APPLICANT: Singh, Yogendra
APPLICANT: Nichols, Peter J.
TITLE OF INVENTION: Anthrax Toxin Fusion Proteins and
TITLE OF INVENTION: Related Methods
NUMBER OF SEQUENCES: 35
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                                                                                        CORRESPONDENCE ALDRESS:
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ADDRESSEE: Townsend and Townsend and Crew LLP STREET: Two Embarcadero Center, Eighth Floor CITY: San Francisco STATE: California
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Klimpel, Kurt R.
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TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 576-0200
TELEPAX: (415) 576-0300
INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARACTERISTICS:
LENGTH: 776 amino acids
TYPE: amino acid
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Best Local
                                           1165 KWYITSGLNPTFDAFDCQLHEFHTEGDNKLV--GNISWRIKTLDSGFFTRSAVQKFVQDP 1222
                                                                                                                              1110 QIKCGDLFENSVYDE--FNECAVSRKKCVPRK---SDLGEFPAPDPSVLVQNFNISDFNG 1164
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ZIP: 94111-3834

COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
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APPLICATION NUMBER: US 0:
FILING DATE: 12-FEB-1993
ATTORNEY/AGENT INFORMATION:
NAME: Weber, Kenneth A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MOLECULE TYPE: protein
       511 AGYLENG-----
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                                                                                                                                                                                      451 ------GADLVDST--
                                                                                                                                                                                                                                                                         397 GLIDSPSINLDVRKQYKRDIQNIDALLHQSIGSTLYNKIYLYENMNINNLTATL----- 451
                                                                                                                                                                                                                                                                                                                                                                                                                                                        297 QIPIEPKKDDIIHSLSQEEKELLKRIQIDSSDFLSTEEKEFLKKLQIDIRDSLSEEEKEL 356
                                                                                                                                                                                                                                                                                                                                                                                                             951 MAVATHCFTSPCHDRIRFFSSDDGIGRLGITRKRINGTFLLKILPPIQSAD----LRTTG 1006
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      908 ---LQRDEENFLRELSKEEMDVLDGLKMEATEV----EKLFGRALPI-----RKL 950
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ZIP: 941
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NAME: Weber, Kenneth A. REGISTRATION NUMBER: 31,677
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICATION NUMBER: FILING DATE: 25-JUI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               OPERATING SYSTEM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          IKNASDSDGQDLLFTNQLKEHPTDFSVEFLEQNSNEVQEVFAKAFAYYIEPQHRDVLQLY 236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APEAFNYMDKFNEQEINLSLEELKDQRMLSRYEKWEKIKQHYQHWSDSLSEEGRGLLKKL 296
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  L---VIQSSEDYVENTEKALN-------VYYEIGKILSRDILSKINQPYQKFLDVLNT 176
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LSSKVENSPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDFNT 847
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -----EVEEIEEEVEKVRDKEVTLFSKLFEGFKE-----
                                                                                      -----DNTKINRGIFNEFKKNFKYSISSNYMIVDINERPALDNERLKWRIQLSPDTR 510
                                                                                                                                                                                                                                                                                                                                                                  ---NRIQVDSSNP-----LSEK--EKEFLKKLKLDIQPYDINQRLQDTG
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1.8%; Score 132; DB 1; Length 776; 17.2%; Pred. No. 0.0098;
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  ----KLILQRNIGLEIKDVQ--
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                                            Query Match 1.8%; Score 132; DB 3; Length 776; Best Local Similarity 17.2%; Pred. No. 0.0098; Matches 139; Conservative 117; Mismatches 254; Indels 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 2, Application PC/TUS9401624 GENERAL INFORMATION:
                                                                                                                                                                                                                  TELEFAX: (415)
INFORMATION FOR SEQ ID NO: 2
SEQUENCE CHARACTERISTICS:
SEQUENCE TWOTH: 776 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT:
APPLICANT:
APPLICANT:
APPLICANT:
                                                                                                                                                                        TOPOLOGY: linear MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                      TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 543-9600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 OPERATING SYSTEM: PC-DOS/MS-DOS SOFTWARE: Patentin Release #1.0, CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COMPUTER READABLE FORM: MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                            ATTORNEY/AGENT INFORMATION:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NUMBER OF SEQUENCES:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1223 NQPGVLYNHDNEYLHYQDDWYILSSKIENKPEDYIFVYYRGRNDAWDGYGGAVVYTR--S 1280
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733 EENKLVGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHD---NEYLLYQDDWY--I 787
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  696 AGYLLDKNOSDLVTNSKKFIDIFKEEGSNL 725
                                                                                                                                                                                                                                                                                                                                                                NAME: Weber, Kenneth A.
REGISTRATION NUMBER: 31,677
REFERENCE/DOCKET NUMBER: 15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICATION NUMBER: PCT/US FILING DATE: June 25, 1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                       CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COMPUTER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ZIP:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STREET:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SVLPNSIIPELEKAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGE-RIIVKEV-- 1338
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Leppla, Stephen H. Klimpel, Kurt R.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Arora, Naveen
Singh, Yogendra
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     USA
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             IBM PC compatible
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Floppy disk
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PCT/US94/01624
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                                          Indels 300;
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788 LSSKVENSPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDFNT 847

72 EMYKAIGG---KIYIVDGDITKHISLEALSEDKKKIKDIYGKDALLHEHYVYAKEGYEPV 128

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US-08-404-531B-6
                                                                                                                                                                                                                              Patent No. 5863724

NUMBER OF SEQUENCES: 4

CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                     Sequence 6, Application US/08404531B Patent No. 5863724
                                                                                                                                                                                                                                                                                                                                                                   GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                 APPLICANT: Joseph Bryan, Lydia Aguilar Bryan, Daniel Nelson, APPLICANT: Thomas, Gilbert Cote, and Robert Gagel TITLE OF INVENTION: Sequence Encoding Mammalian Sulfonylurea
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1110
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COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: LBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1281 SVLPNSIIPELEKAAKSIGRDFSTFIRTDNTCGPEPALVERIEKTVEEGE-RIIVKEV-- 1338
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CITY: I
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                                                                                    COUNTRY:
ZIP: 191
                                                                                                                                                                    ADDRESSEE: Woodcock Washburn Kurtz Mackiewicz & ADDRESSEE: No. 5863724ris
STREET: One Liberty Place 46th. Floor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KWYITSGLNPTFDAFDCQLHEFHTEGDNKLV--GNISWRIKTLDSGFFTRSAVQKFVQDP 1222
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                                                                                      19103
                                                                                                                                                Philadelphia
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                                                                                                          USA
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    APPLICANT:
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US-08-404-531B-6
                                                                                                                                        US-08-404-531B-28
                    Sequence 28, Application US/08404531B
Patent No. 5863724
GENERAL INFORMATION:
APPLICANT: Joseyh Bryan, Lydia Ag
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local Similarity
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INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SOFTWARE: PatentIn Release #1.0, Version CURRENT APPLICATION DATA: APPLICATION NUMBER: US/08/404,531B FILING DATE: 15-MAR-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TOPOLOGY: linear MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REFERENCE/DOCK: NUMBER: BY TELECOMMUNICATION INFORMATION: TELEPHONE: 215-568-3100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CLASSIFICATION: 435
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                        1308 TDNTCGPEPALVERIEKTVEEGERIIVKEVEEIEEEVEKE 1347
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                480 KLSQAQRTTL-----EYSNERLKQT---NEMLRGIKLLKLYAWENIFCSRVEKTRRK 528
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    868 KVEEGERTIIKEVEEIEEEVEKVRDKEVTLESKLEEGEK--ELQRDEENFLRELSKEEMD 925
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      794 NKQRYKMVIEA.TSLQPDIDIL-----PHGDQTQIGERGINLSTGGQRPDQCRPEPST 845
                                                                                                                                                                                                                                                   947 RK---APEPS--: USLPRAMSSRDGLLLDEDEEEEEAAESE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         REGISTRATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ENSVVDEFNECHVSRKKCVPRKSDLGEFPAPDP--------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EMTSLRAFAVYTSISIFMNTAIPIAAVLITFV-----GHVSFFKESDFSPSVAFASL 580
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VLDGLKMEA - - TEVEKLFGRALPIRKLMAVATHCFTSPCHDRIRFFSSDD - - - - - GIGRL 978
                                                                                                                                                                                                                                                                                                                                                                                                                   KIENKPEDYIF TYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELEKAAKSIGRDFSTFIR 1307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NGKWY----ITSGLNPTFDAFDCQLHEFHTEGDNKLVGNISWRIKT--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WNSLPD-----SEGRRPQQPRAGDSGRFGCQEQRPCGYASQKPWLLNATVEENITFESPF 793
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               IFDIVPL-----PSKNELKELTAPLLLKLVGVLACAFLIVPSADAVDALKTCACLLKG 1076
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SLFHILVTPLFLLSSVVRSTVKALVSVQKLSEFLSSAEIREEQCAPREPAPQGQA----G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GITRKRINGTF'LL-----KILPPIQ-----SADLRTTGGRSSRPLSAFRSGFSKG 1023
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STPMIVFLDDPFSALDVHLSDHLMQAGILELLRDDKRTVVLVTHKLQYLPHA-DWIIAMK 904
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FFTWTPDGIPTLSNITIRIPRGQLTMIVGQVGCGKSSLLLATLG-----EMQKVSGAVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              KYQAVPLKVVNRKRPAREEVRDLLGPLQ------RLTPSTDG-DADNFCVQIIGG
                                                                                                                                                                                                                                                                                                                                                               DGTIQREGTLKDFQRSECQLFEHW-----KTLMNRQDQELEK-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  amino acid
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1581 amino acids
Joseph Bryan, Lydia Aguilar Bryan, Daniel Nelson, Thomas, Gilbert Cote, and Robert Gagel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             15-MAR-1995
N: 435
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ----RIELAKCIANPACAANVACLQTCNNRPDETECQIKCGDLF 1117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            34,293
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          5:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            72; Mismatches 221;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BYLR-0003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 124; DB 2; Length 1581; Pred. No. 0.15;
                                                                                                                                                                                                                                                         981
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels 178;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SVLVQNFNI-SDF 1162
                                                                                                                                                                                                                                                                                                                                                                  ETVME 946
                               Pamela
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            636
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COUNTRY: UZIP: 19103

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Patent No. 5863724
NUMBER OF SEQUENCES:
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INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
LENGTH: 1498 amino aci
1248 KIENKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELEKAAKSIGRDFSTFIR 1307
                                                                                                                                                                                          1163 NGKWY----ITSGLNPTFDAFDCQLHEFHTEGDNKLVGNISWRIKT------ 1205
                                                                                                                                                                                                                                                                                         1118 ENSVVDEFNECAVSRKKCVPRKSDLGEFPAPDP------SVLVQNFNI-SDF 1162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1024 IFDIVPL------PSKNELKELTAPLLLKLVGVLACAFLIVPSADAVDALKTCACLLKG 1076
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      REFERENCE/DOCKET NUMBER: BY TELECOMMUNICATION INFORMATION: 215-568-3100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CLASSIFICATION: 435
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TITLE OF INVENTION:
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                                           846 STPMIVFLDDPFSALDVHLSDHLMQAGILELLRDDKRTVVLVTHKLQYLPHA-DWIIAMK 904
                                                                                                                                          794 NKQRYKMVIEACSLQPDIDIL------PHGDQTQIGERGINLSTGGQRPDQCRPEPST 845
                                                                                                                                                                                                                                        739 WNSLPD-----SEGRRPQQPRAGDSGRFGCQEQRPCGYASQKPWLLNATVEENITFESPF 793
                                                                                                                                                                                                                                                                                                                                       685 FFTWTPDGIPTLSNITIRIPRGQLTMIVGQVGCGKSSLLLATLG-----EMQKVSGAVF 738
                                                                                                                                                                                                                                                                                                                                                                                                                                   637 KYQAVPLKVVNRKRPAREEVRDLLGPLQ-------RLTPSTDG-DADNFCVQIIGG 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    581 SLFHILVTPLFLLSSVVRSTVKALVSVQKLSEFLSSAEIREEQCAPREPAPQGQA----G 636
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 926 VLDGLKMEA--TEVEKLFGRALPIRKLMAVATHCFTSPCHDRIRFFSSDD-----GIGRL 978
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  480 KLSQAQRTTL-----EYSNERLKQT---NEMLRGIKLLKLYAWENIFCSRVEKTRRK 528
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  868 KVEEGERTIIKEVEEIEEEVEKVRDKEVTLFSKLFEGFK--ELQRDEENFLRELSKEEMD 925
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STREET: One ____
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NAME: Beardell, Lori Y. REGISTRATION NUMBER: 34,293
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICATION NUMBER: FILING DATE: 15-MA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
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                                                                                            -----LDSGF-----FTRSAVQKFVQDPNQPGVLYNHDNEYLHYQDDWYILSS 1247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GITRKRINGTFLL------KILPPIQ-----SADLRTTGGRSSRPLSAFRSGFSKG 1023
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EMTSLRAFAVYTSISIFMNTAIPIAAVLITFV-----GHVSFFKESDFSPSVAFASL 580
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   amino acid
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 USA
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                                                                                                                                                                                                                                                                                                                                                                                        -----RIELAKCIANPACAANVACLQTCNNRPDETECQIKCGDLF 1117
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       49
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US/08/404,531B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           72; Mismatches 221; Indels 178; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 124; DB Pred. No. 0.14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BYLR-0003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DB 2; Length 1498;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 26;
                    Вb
                                                             QУ
                                                                                                                   Вb
                                                                                                                                                                                                                                                                                                                                       ; MOLECULE TYPE: protein US-08-460-309-2
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US-08-460-309-2
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                                                                                                                                                                                                                                   Query Match
Best Local Similarity
                                                                                                                                                                                                                 Matches 163;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence 2, Application US/08460309 Patent No. 5837496
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TELEFAX: (619) 535-8949 INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FILING DATE: 27-JUL-1992
ATTARNEY/AGENT INFORMATION:
NAME: Campbell, Cathryn A.
REGISTRATION NUMBER: 31,815
REFERENCE/DOCKET NUMBER: P-LA
TELECOMMUNICATION INFORMATION:
TELEPHONE: (619) 535-9001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRIOR APPLICATION NUMBER: US 08/125,0,,
APPLICATION NUMBER: US PCT/US 94/10730
APPLICATION NUMBER: US PCT/US 94/10730
FILING DATE: 21-SEP-1994
PRIOR APPLICATION NUMBER: US 07/472,319
                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICATION NUMBER: US 07 FILING DATE: 30-JAN-1990 PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COMPOTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS SOTWARE: Patentin Release #1.0, CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CLASSIFICATION: 435 PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ADDRESSEE: Campbell and Flores
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TITLE OF INVENTION: Nucleic Acids Encoding Merosin, Merosin TITLE OF INVENTION: Fragments and Uses Thereof NUMBER OF SEQUENCES: 23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT:
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                                                        352 ----LQKAAKSVGRDFNNFITTDNSCGPEPPLVERLEKTAEEGEKLLIKEAVEIEEEEVEK 407
                                                                                                                                                      294 NEFLHYQDDWYTLSSQIENKPDDYTFVYYRGRNDAWDGYGGSVIYTRSPTLPE-SIIPN- 352
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   947 RK---APEPS--QGLPRAMSSRDGLILDEDEEEEEAAESE 981
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            50 TAAKLQ-AVKDKARQAND--TAKDVLAQITELHQNLDGLKKNYNKL--ADSVAKTNAVVK 104
                                                                                                                                                                                                                                                                                                                                                                                     TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICATION NUMBER: US 07/919,951
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICATION NUMBER: US/08/460,309 FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MEDIUM TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COUNTRY: UZIP: 92122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CITY: San Diego
                                                                                                                                                                                                                                                                                                                                                                                                                                   LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STREET:
                                                                                                           amino acid
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                                                                                                                                                                                                               Conservative
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US-08-404-531B-28

TOPOLOGY:

Matches 109; Query Match

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                                                                                                                                                                                                                                                                                                                                                                                                                                            GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                  APPLICANT: Engvall, Eva
APPLICANT: Engvall, Eva
APPLICANT: Leivo, Ilmo
TITLE OF INVENTION: Nucleic Acids
TITLE OF INVENTION: Fragments and
NUMBER OF SEQUENCES: 23
            MEDIUM TYPE: Floppy disk
COMPOTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
                                                                                                              COMPUTER READABLE FORM: MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                CORRESPONDENCE ADDRESS:
ADDRESSEE: Campbell and Flores
STREET: 4370 La Jolla Village
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              105
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                164
                                                                                                                                                                                  COUNTRY:
APPLICATION NUMBER:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               VE---KLFGRALPIRKLRMALAPHSNFLANHET----IKYYVGS------KLPGH
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US/08/460,309
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FILING DATE: 27-JUL-1992
ATTORNEY/AGENT (IFFORMATION:
NAME: Campbeil, Cathryn A.
REFERENCE/JOCKET NUMBER: 31,815
REFERENCE/JOCKET NUMBER: 9-LA 9721
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TELEPHONE: (519) 535-9001
TELEFAX: (619) 535-8949
INFORMATION FOR SEQ ID NO: 4:
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PRIOR APPLICATION DATA: APPLICATION NUMBER: U
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LENGTH: 3111 amino acids
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FILING DATE: 22-SEP-1993
APPLICATION NUMBER: US PCT/US 94/10730
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-VQDPKYPGILYNHDNEYLLYQDDWYILSSKVENSPEDYIFVYYKGRNDAWDGYGGSVLY 820
                                                    QKQANISIVDIDT-----NQEENIATSSSGNNFGLDLKADDKIYFGGLPTLRNLSMKARP
                                                                                                                                                              FSSSALLMYLAIRDLRDFMSVELTDGHIKVSYDLGSGMASVVSNQNHNDGKWKSFTLSRI 2431
                                                                                                                                                                                                                                                                                                                                LFENSVVDEFNECAVSRKKCVPRKSD-------
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                                                                                                          TRGLNPTFDAFDCQLHEFHTEENKLV----GNLSWRIRTPD----GGFFT-RSAVQKF--
                                                                                                                                                                                                                                                                         ------GCTVS-----PQVEDSEGTIQFDGEGYALVSRPIRWYPNISTVMFKFRT 2371
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                                                                                                                                                                                                                                                                                                                                                                                          ----FTGCMGETYFDNKP---
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659

Gaps

Query Match 1.5%; Score 115.5; DB 2; Length 1130; Best Local Similarity 20.0%; Pred. No. 0.46; Matches 163; Conservative 96; Mismatches 262; Indels 293; Gaps 43; Qy 294 NEFLHYQDDWYILSSQIENKPDDYIFVYYRGRNDAWDGYGGSVIYTRSPTLPE-SIIPN- 352	10N: 01 2:	FILING DATE: 30-JAN-1990 PRIOR APPLICATION NUMBER: US 07/472,319 PRIOR APPLICATION DATA: APPLICATION NUMBER: US 07/919,951 FILING DATE: 27-JUL-1992 FILING DATE: 27-JUL-1992 ATTORNEY/AGENT INFORMATION: NAME: Campbell, Cathryn A. REGISTRATION NUMBER: 31,815 REFERENCE/DOCKET NUMBER: 9-LA 9721	/12	COUNTRY: USA COUNTRY: USA ZIP: 92122 COMPUTER READABLE FORM: MEDIUM TYPE: Floppy disk COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS SOFTWARE: Patentin Release #1.0, Version #1.25	APPLICANT: Leivo, Ilmo ITILE OF INVENTION: Nucleic Acids Encoding Merosin, Merosin ITILE OF INVENTION: Fragments and Uses Thereof NUMBER OF SEQUENCES: 23 CORRESPONDENCE ADDRESS: ADDRESSE: Campbell and Flores STREET: 4370 La Jolla Village Drive, Suite 700 CITY: San Diego	pplicati 72231 72231 58 72231 58 RMATION: Engval	Db 2487 EVNLKKYSGCLKDIEISRTPYNILSSPDYVGVTKGCSLENVY 2528 Qy 821 TRSAVLPESIIPELQTAAQKVGRDENTFIKTDNTCG
CORRESPONDENCES: 23 CORRESPONDENCE ADDRESS: ADDRESSEE: Campbell and Flores STREET: 4370 La Jolla Village Drive, Suite 700 CITY: San Diego STATE: California COUNTRY: USA	77-4 4, App . 5872 . 5872 . 5872 . 5872 INFORM ANT: ANT: ANT: OF INV	Qy 864RLEKKVEEGERTIIKEVEEIEEEVEKVRD-KEVTLFSKLFEGFKELQRDE-E 913	Qy 762 -VQDFKYPGILYNHDNEYLLYQDDWYILSSKVENSPEDYIFVYYKGRNDAWDGYGGSVLY 820	Qy 702	QY 606 DAVDALKTCTCLLKECRLELAKCISUPACAANVACLQTCNNRPDETECQIKCGD 659 :	Qy 501 KRFSWGW	Db 6 NDVKENEDHLNGLKTRIENA

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                                           Qy
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NAME: Campbell, Cathryn A.
REGISTRATION NUMBER: 31,815
REFERENCE/DOCKET NUMBER: P-LA 9721
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICATION NUMBER: US 07/472,319 FILING DATE: 30-JAN-1990 PRIOR APPLICATION DATA:
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COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                               2145
  2372
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CURRENT APPLICATION DATA:
                                                                                                                                                                              2290 KKADAVRVIT-----FTGCMGETYFDNKP-----IGLWNFREKEGDCK----
                                                                                                                                                                                                                                                                           2256 IVPSTHHSTSP--
                                                                                                                                                                                                                                                                                                                                                                  2205 VSFLWDVGSGVGRVEYPDLTIDDSYWYRIVASRTGRNGTI-----SVR---ALDGPKAS 2255
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2031 TAAKLQ-AVKDKARQAND--TAKDVLAQITELHQNLDGLKKNYNKL--ADSVAKTNAVVK 2085
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  408
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   294 NEFLHYQDDWYILSSQIENKPDDYIFVYYRGRNDAWDGYGGSVIYTRSPTLPE-SIIPN- 352
                                                                                                                                   660 LFENSVVDEFNECAVSRKKCVPRKSD------
                                                                                                                                                                                                                            606 DAVDALKTCTCLLKECRLELAKCI-----SNPACAANVACLQTCNNRPDETECQIKCGD 659
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OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICATION NUMBER: US PCT/US 94/10730 FILING DATE: 21-SEP-1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TYPE: amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CLASSIFICATION:
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FSSSALLMYLATRDLRDFMSVELTDGHIKVSYDLGSGMASVVSNQNHNDGKWKSFTLSRI
                                                                                                                                                                                                                                                                                                                    LFSHGKHNLSPAHSINQNVPKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKA 605
                                                                                                                                                                                                                                                                                                                                                                                                                                                          IKVSVSSGGDCIRTYKPEIKKGSYNNIVVNVKTAVADNLLFYLGSAKFIDFLAIEMRKGK 2204
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                                                                                      -GCTVS-----PQVEDSEGTIQFDGEGYALVSRPIRWYPNISTVMFKFRT 237:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Pred. No. 2.4;
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                                                                                                                                   -VGDFPV---PDPSVLVQKF-- 702
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                                           ---SGKW-----FI 712
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US-08-568-459A-4
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; ORGANISM:
US-08-568-459A-4
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                                                                                                                                                                                                                        REGISTRATION NUMBER: 29,655
REFERENCE/DOCKET NUMBER: NIH
TELECOMMUNICATION INFORMATION:
TELEPHONE: (619) 235-8550
TELEFAX: (619) 235-0176
INFORMATION FOR SEC ID NO: 4:
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APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                CLASSIFICATION: 435
ATTORNEY/AGENT INFORMATION:
NAME: Israelsen, Ned
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version
CURRENT APPLICATION DATA:
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MEDIUM TYPE: Floppy
COMPUTER: IBM PC com
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LENGTH: 1435 amino aci
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                                             ORIGINAL SOURCE:
                                                             MOLECULE TYPE: protein HYPOTHETICAL: NO
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TITLE OF INVENTION: AND PLASMODIUM FALCIPARUM ERVTHROCYTE BINDING PROTEINS
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                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICATION NUMBER: US/0 FILING DATE: 07-DEC-1995
                                                                                                             TOPOLOGY:
                                                                                                                                  TYPE: amino acid
STRANDEDNESS: si
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   STATE: California
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ADDRESSEE:
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                                                                                                                                                                                1435 amino acids
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                     Plasmodium falciparum
                                                                                                               linear
                                                                                                                                  single
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US-08-353-700-1
                                                                                                                                                 Sequence 1, Application US/08353700 Patent No. 5599919
                                                                                                                        GENERAL INFORMATION:
   APPLICANT: YEN, TIMOTHY J.

APPLICANT: RATTNER, JEROME B.

TITLE OF INVENTION: NUCLEIC ACID ENCODING A

TITLE OF INVENTION: TRANSIENTLY-EXPRESSED KINETOCHORE PROTEIN,
                                                                                                                                                                                                                                                                                                                          1045 ----NTPGP---LDNTSEETTERISNNEYKVNEREDERTLTKEYEDI 1084
                                                                                                                                                                                                                                                                                                                                                                                1305 FIRTDNTCGPEPALVERIEKTVE------EGERIIVKEVEEI 1340
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1191 DNKLYGNISWRIKTLDSGFFTRSAYQKFYQDPNQPGYLYNHDNEYLH-----YQDDWYI 1244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1135 CVPRKSDLGEFPAPDPSVLVQNFNIS---DFNGKWYI-TSGLNPTFDAFDCQLHEFHTEG 1190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1032 SKNELKELTAPLLLKLVGVLACAFLIVP--SADAVDALKTCACL-LKG-CRIELAKCIAN 1087
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  561 -NDLSNRKLVGKINTNSKY---VHRNKKNDKLFRDEWWKVIKK---------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        749 DGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLYQDDWYILSSKVENSPEDYIFVYYKGRN 808
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        612 KTCTCLLKECRLELAKCISNPACAANVACLQTCNNRPDETECQIKCGDLFENSVVDEFN- 671
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Local Similarity 19.3%; Pred. No. 0.75; nes 171; Conservative 122; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                       VNMNVEKELKDTL----ENPS-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LSSKIENKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVLPNSIIPELEKAAKSIGRDFST 1304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PACAANVACLQTCNN------RPDETECQIKCGDLFENSVVDEFNECAVSRKK 1134
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         KGNEQKERDDDSLSKI------SVSPENSRPETDAKDTSNLLKLKGDVDISMPKAVIG 836
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      --EVKDVPISIIRNNEQTSQEAVPE-ENTEI---AHRTETP-----SISEG------P 784
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VYLKKYSEKCSNLNFEDEFKEELHSDYK-------NKCTMCP------ 744
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ECKEKPCEDDNCKSKCNSYKEWISKKKEEYNKQAKQYQEYQKGNNYKMYSEFKSIK--PE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRDFNTFIK-TDNTCGPEPPLVERL-- 866
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DEDEKGADEERHSTSES---LSSPEEKMLTD-NEGGNSLNHEEVKEHTSNSDNVQQSGGI 1003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SINNGDDSGSGSATVSESSSSNTGLSIDDDRNGDTFVRTQDTANTEDV----IRKENADK 947
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SSPNDNINVTEQGDNISGVNSKPLSDDVRPDKKELEDQNSDESEETVVNH-----ISKSP 891
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        -----EC----AVSRKKCVPR------
                                                                                                                                                                                                                                                                                                                                                                                                                                          ---SSLDEGKAHEELSEPNLSSDQDMS- 1045
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Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TELEFAX: (215) 563-4044
INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ZIP: ]
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1160 MKTKHECQNLESEPI-----RN-----SVKERESERNQCNFKPQMDLEVKEISLDS 1205
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORIGINAL SOURCE:
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TELECOMMUNICATION INFORMATION:
TELEPHONE: (215) 563-4100
                                                                                                            1115 TDNQNNSKSEAGGLKQEIMTLKE---EQNKMQKEVND-----LLQENEQLM-----KV 1159
                                                                                                                                                                                                                               1085 FLTKLAFAEER-------NQNLMLE------LETVQQALRSEM 1114
                                                                                                                                                                                                                                                                                                                                            1047 QEKNSKLECLLNE-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1008
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ATTORNEY/AGENT INFORMATION: NAME: REED, JANET E.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TITLE OF INVENTION: AND METHODS OF USE NUMBER OF SEQUENCES: 4
                                                      788 LSSKVE--NSPEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRD- 845
                                                                                                                                                                                                                                                                                     668 EFNECAVSRKKCVPRKSDVGDFPVPDPSVLVQKFDMKDFSGKWFITRGLNPTFDAFDCQL 727
                                                                                                                                                                                                                                                                                                                                                                                                     608 VDALKTCTCLLKECRLELAKCISNPACAANVACLQTCNNRPDETECQIKCGDLFENSVVD 667
                                                                                                                                                                      728 HEFHTEENKLYGNLSWRIRTPDGGFFTRSAYQKFYQDPKYPGILYNHDNEYLLYQDDWYI 787
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     548 SHGKHNLSPAHSINQNVPKGNSGCKFPKDVALMVWEKWGQFAKTAIVAIFILSVASKADA 607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        488 TIKYYVGSKLPGHKRFSWGWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLF 547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           943 ELQLLSET----LSLEKKEMSSIISLNKREIEELTQENGTLKEINASLNQEKMNLIQKSE 998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     429 ELQQDEENFVRELSKEEKEILNELQMEATEVEKLFGRALPIRKLRMALAPHS-NFLANHE 487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              883 QRISKLQEDTSAHQNVVAETLSALENKEKELQLLNDKVETEQAEIQELKKSNHLLEDSLK 942
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     381 ERLEKTAEE--GEKLLIKEAVEIEEEVEKEVEKVRD---TEMTLFQRLL------EGFK 428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   STREET: 1001
CTTY: PHILADELPHIA
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OPERATING SYSTEM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICATION NUMBER: FILING DATE: 09-DEC CLASSIFICATION: 435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDIUM TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ORGANISM: HUMAN
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STRANDEDNESS: single
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     COUNTRY:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 219;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              3248 amino acids
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       IBM PC compatible
SYSTEM: PC-DOS/MS-DOS
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17.7%; Pred. No. 4.6;
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                                                                                                                                                                                                                                                                                                                                               --CTSLCENRKNELE-QLK--EAFAKEHQE 1084
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                                                                                                                                                                                                                                                                          Sequence 1, Application PC/TUS9516216
GENERAL INFORMATION:
APPLICANT: Yen, Timothy J.
APPLICANT: Rattner, Jerome B.
TITLE OF INVENTION: Nucleic Acid Encoding a Transiently
TITLE OF INVENTION: Expressed Kinetochore Protein, and P
ZIP: 19103-23.
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1688
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                                                                                                                                                                                                                                     NUMBER OF SEQUENCES: 4
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1864 DIHNLQLRVKETSNENLRLLHVIEDRDRKVESLLNE 1899
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1518 ANQCSVDEVFCSSLQTYVDSLKAEN---LVLSTNLRNFQGDLVKEMQLGLEEGLVPSLSS 1574
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1125 FNECAVSRKKCVPRKSDLGEFPAPDPSVLVQNFNISDFNG-----KWYITSGLNPTFDA 1178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1460 LVKEMQLGLEEGLVPSLSSSCVPDSSSLSSLGDSSFYRALLEQTGDMSLLSNLEGAV--S 1517
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1048
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1806 TETGAVKPTGECSGEQSPDTNYEPPGEDKT--QGSSECISELSFSGPNALVPMDFLGNQE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        949
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             994
                                                                                           COUNTRY: USA
ZIP: 19103-2307
                                                                                                                                                                                         STREET:
                                                                                                                                                                                                             ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NKPEDYIFVYYRGRNDAWDGYGGAVVYTRSSVL-----PNSIIPELEKAAKSI-GRDFS 1303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DEENF --- VRELSKEEMEFLDEIKMEASEVEKLFGK 1404
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    S--RSLLGIDTEDAIQGRNESCDISKEHTSETTERTPKHDVHQICDKDAQQDLNLDIEKI
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   KLMAVA-----THCFTS-----PCHDRIRFFSSDDGIGRLGITRKRINGTFLLKI 993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RQELDCLRKQYLSENEQWQQKLTSVTLEMESKLAAEKKQTEQLSLELEVARLQLQGLDLS
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SCVPDSSSLSSLGDSSFYRALLEQTGDMSLLSNLEGVVSANQCSVDEVFCSSLQEENLTR 1634
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VQMHFAELQEKFLSLQSEHKILHDQHCQMSSKMSELQTYVDSLKAENLVLSTNLRNFQGD 1459
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VGV----LACAFLIVPS------ADAVDALKTCACLLKGCRIELAKCIAN---- 1088
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LPPIQSADLRTTGG-----RSSRPLSAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKL 1047
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    KYELVTELNDSRSECITATRKMAEEVGKLLNEVKILNDDSGL------LHGE-LVED 1363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SQEISGLKDCEIDAEEKYISGPHELSTSQNDNAHLQCSLQTTMNKLNELEKIC-EILQAE 1313
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                                                                                                                                                                   Philadelphia
                                                                                                                                            PA
                                                                                                                                                                                      E: Dann, Dorfman, Herrell and Skillman 1601 Market Street Suite 720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ------PACAANVACLQTCNNRPDETECQIKCGDL-----FENSVVDE 1124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ------RSAVQKFVQDPNQPGVLYNHDNEYLHYQDDWYILSSKIE 1250
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GGEFGEQPNEQHPVS---
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PCT-US95-16216-1
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TELEPHONE: (2.5) 563-4100
TELEPHONE: (2.5) 563-4100
TELEPAX: (2.5) 563-4044
INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                   1085
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              OPERATING SYSTEM: PC-DOS/MS-DOS SOFTWARE: Patentin Release #1.0, CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1047
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FILING DATE: 09-DEC-1995
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                              1115 TDNQNNSKSEAGGLKQEIMTLKE---EQNKMQKEVND-----LLQENEQLM-----KV 1159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         HYPOTHETICAL:
                                                                                                                                                                                                             1160 MKTKHECQNLESEPI-----RN-----SVKERESERNQCNFKPQMDLEVKEISLDS 1205
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        999
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949 KLMAVA-----: HCFTS------PCHDRIRFFSSDDGIGRLGITRKRINGTFLLKI 993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          883 QRISKLQEDTSAHQNVVAETLSALENKEKELQLLNDKVETEQAEIQELKKSNHLLEDSLK 942
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REGISTRATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CLASSIFICATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NAME:
                                                                                                                                                                    FNT-FIKTDNTCGPEPPLVERLEKKVEEGERTIIKEVEEIEEEVEKVR-DKEVT----LF 898
                                                                                                                                                                                                                                                     LSSKVE--NSFEDYIFVYYKGRNDAWDGYGGSVLYTRSAVLPESIIPELQTAAQKVGRD- 845
                                                                                                                                                                                                                                                                                                                                                                                 TIKYYVGSKLPGHKRESWGWEDYFGSIVVAKICSSRRIPRYFRKSPRICCGLDSRGLQLF 547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ELQLLSET - - - - LSLEKKEMSSIISLNKREIEELTQENGTLKEINASLNQEKMNLIQKSE 998
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                                         SQEISGLKDCEIDAEEKYISGPHELSTSQNDNAHLQCSLQTTMNKLNELEKIC-EILQAE 131:
                                                                                                                          YNAQLVQLE-----AMLRNKELKLQESE----KEKECLQHELQTIRGDLETSNLQDMQ 1254
                                                                                                                                                                                                                                                                                                                               HEFHTEENKLYGNLSWRIRTPDGGFFTRSAVQKFVQDPKYPGILYNHDNEYLLYQDDWYI 787
                                                                                                                                                                                                                                                                                                                                                                                                                         EFNECAVSRKK: VPRKSDVGDFPVPDPSVLVQKFDMKDFSGKWFITRGLNPTFDAFDCQL 727
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       QEKNSKLECLLME------
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SFANYI-----DER----
                                                                                   SKLFEGFKELQKD-EENFL---RELSKEEMD-----VLDGLKMEATEVEKLFGRALPIR 948
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17.7%; Pred. No. 4.6;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                  --CTSLCENRKNELE-QLK--EAFAKEHQE 1084
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                                                                                                                                                                                                                                                                                                                                                                               --LETVQQALRSEM 1114
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Sequence 4, Application US/08603753D Patent No. 5891857
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APPLICANT: HOLT,
                                                                 COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette, 3.50 inch, 800 kB storage
COMPUTER: IBM FC/XT/AT compatible
                                                                                                                                                                                                                                                                                                                                                NUMBER OF SEQUENCES: 2
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                    TITLE OF INVENTION: CHARACTERIZED BRCA1 AND BRCA2
TITLE OF INVENTION: PROTEINS AND SCREENING AND THERAPEUTIC METHODS BASED
TITLE OF INVENTION: CHARACTERIZED BRCA1 AND BRCA2 PROTEINS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1864 DIHNLQLRVKETSNENLRLLHVIEDRDRKVESLLNE 1899
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COMPUTER: IBM FURNING SYSTEM: Windows 3.1
CONTWARE: WORD PERFECT 6.1 and ASCII
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TETGAVKPTGECSGEQSPDTNYEPPGEDKT--QGSSECISELSFSGPNALVPMDFLGNQE 1863
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        S--RSLLGIDTEDAIQGRNESCDISKEHTSETTERTPKHDVHQICDKDAQQDLNLDIEKI 1805
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FNECAVSRKKCVPRKSDLGEFPAPDPSVLVQNENISDFNG-----KWYITSGLNPTFDA 1178
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                KETPSAPAKGVEELESICEVYRQSLEKLEEKMESQGIMKNKEIQELE-----QLLSS--E
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                                                                                                                                                                                                                                                DURHAM
                                                                                                                                                                                                                     NORTH CAROLINA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -----PACAANVACLQTCNNRPDETECQIKCGDL----FENSVVDE 1124
                                                                                                                                                                                                                                                                         BOULEVARD
                                                                                                                                                                                                                                                                                            SUITE 1401, UNIVERSITY TOWER, 3100 TOWER
                                                                                                                                                                                            USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SZABO, CSILLA I.
JETTON, THOMAS L.
ROBINSON-BENION, CHERYL L.
THOMPSON, MARILYN E.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PAGE, DAVID L.
KING, MARY-CLAIRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     JENSEN, ROY A.
                                                                                                                                                                                                                                                                                                                     ARLES A. TAYLOR, JR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         -DCQLHEFHTE--GDNKLVGNISWRIK----TLDSGFFT----- 1212
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ; RELEVANT RESIDUES IN SEQ ; RELEVANT RESIDUES IN SEQ US-08-603-753D-4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FEATURE:

NAME/KEY: BRCA2 protein

LOCATION: 1 to 3418; Genbank locus HSU43746

IDENTIFICATION METHOD:

OTHER INFORMATION: BRCA2 protein has a negative

OTHER INFORMATION: regulatory effect on growth of human mammary cells.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NAME: ARLES A. TAYLOR, JR.
REGISTRATION NUMBER: 39.395
REFERENCE/DOCKÉT NUMBER: 12.
TELECOMMUNICATION INFORMATION:
TELEPHONE: (919) 493-8000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRIOR APPLICATION DATA:
APPLICATION NUMBER: U.S.
FILING DATE: 17 JAN 1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MOLECULE TYPE:
HYPOTHETICAL:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PUBLICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ATTORNEY/AGENT INFORMATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ANTI-SENSE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CURRENT APPLICATION DATA:
                                                      223 DFSGKWYI-----TSGLNPTFDAFDCQL-----HEFHMENDKLVGNLTWRIKTLDG
                                                                                                        695 KEKLQLFITPEADSLSCLQEGQCENDPKS--KKVSDIKEEVLAAACHPVQHSKVE-YSDT
                                                                                                                                                                                                                                                                                                                                                                                                                          540 LEIHTVCSQKEDSL------CPNLIDNGSWPATTTQNSVALK---NAGLISTLKKKTNK 589
                                                                                                                                                            173 IKCGDLFENSVVD-----QFNECAVSRKKCVPRKSDVGEFPV-----PDRNAVVQNFNMK 222
                                                                                                                                                                                                                645 RSCS-----QNDSEEPTLSLTSSFGTILRKCSRNETCSNNTVISQDLDYK--EAKCN 694
                                                                                                                                                                                                                                                                    113 LVCTFVIVPRVDAVDALKTCACLLKECRIELAKCIANPSCAANVACLQTCNNRPDETECQ 172
                                                                                                                                                                                                                                                                                                                        590 FIYAIHDETFYKGKKIPKDQKSELINCSAQF-EANAFE----APLTFANADSGLLHSSVK 644
                                                                                                                                                                                                                                                                                                                                                                         60 KTSSFSDSSHCK-----DKSQICSIDTSFEEIQRFDLKRGMTLILEKQWRQFIQLAIV 112
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PAGES: 789-792
DATE: 1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AUTHORS: Wooster, R. et al.
TITLE: Identification of the breast cancer
TITLE: susceptability gene BRCA2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ORGANELLE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DEVELOPMENTAL STAGE: adult TISSUE TYPE: female breast
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICATION NUMBER: US/0 FILING DATE: 20 FEB 1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              VOLUME:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ORGANISM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TYPE: amino acid
STRANDEDNESS: sin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TELEFAX:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          JOURNAL:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORGANISM: Homo sapiens sapiens INDIVIDUAL ISOLATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              3 LSLHTVFLCKEEALNLYARSPCNERFHRSGQPPT---NIIMMKIRSNNGYFNSFRLFTSY 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     275;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     3418
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative 212;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     unknown
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1.5%; Score 111.5;
17.8%; Pred. No. 6.1;
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US-08-603-753D-4

APPLICANT:
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STATE: STREET: STREET:

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ZIP: 2770 COUNTRY: APPLICANT:

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1696	.659 SPYSVIENSALAFYTSCSRKTSVSQTSLLEAKKWLREG	90
1171	114GDLFENSVVDEFNECAVSRKKCVPRKSDLGEFPAPDPSVLVQNFNISDFNGKWYITSG	0у 1
1658	.599 NNDKNLVSIETVVPPKLLSDNLCRQTENLKTSKSIFLKVKVHENVEKETAKSPATCYTNQ	<u>д</u>
1114	074 LKGCRIELAKCIANPACAANVACLOTCNNRPDET-ECQIKC	0у 1
1598	:: :: :: :: : : : : :	
1073	014 SAFRSGFSKGIFDIVPLPSKNELKELTAPLLLKLVGVLACAFLIVPSADAVDALKTCACL	Qy 1
1556	498 -GIGNQLVIFQGQPERDEKIKEPILLGFHTASGKKVKIAKESLDKVKNLFDEKEQGISEI	Db 1
1013	973 DGIGRLGITRKRINGTFLLKILPPIQSADLRTTGGRSSRPL	Qy
1498	466 LHSDIRKNKMDILSYEETDIVKHKILKESVPV	Db 1
972	KMEATEVEKLFGRALPIRKLMAVATHCFTSPCHDRIRFFSSD	Qy
1465)FETSDTFFQTASGKNISVAKELFNKIVNFFDQKPEELHNFSLNSE	Db 1
917	PLFSKLFEGFKELQRDEENFL	Qy
1413	361 QHNICIKLSGQFMKEGNTQIKEDLSDLTFLEVAKAQEACHGNTSNKEQLTATK	Db 1
864	823 SAVLPESIIPELQTAAQKVGRDFNTFIKTDNTCGPEPPLVER 8	Qy
1360	.311 EN-YKRNTENEDNKYTAASRNSHNLEFDGSDSSKNDTVCIHKDETDLLFTD	Db 1
822	DPKYPGILYNHDNEYLLYQDDWYILSSKVENSPEDYIFVYYKGRNDAWDGYGGSVLYTR	Qy
1310	263SKCHDSVVSMFKIENHNDKTVSEKNNKCQLIIQNNIEMTTGTFVEEIT 1	Db 1
762	706 FSGKWFITRGLNPTFDAFDCQLHEFHTEENKLVGNLSWRIRTPDGGFFTRSAVQKFV 7	Qy
1262	204 ASGYLTDENEVGFRGFYSAHGTKLNVSTEALQKAVKLFSDIENIS-EETSAEVHPISLSS 1	. Db 1
705	FNECAVSRKKCVPRKSDVGDFPVP	Qy
1203	1150 TILKTTSEECRDADLHVIMNAPSIGQVDSSKQFEGTVEIKRKFAGLLKNDCNKS 1	Db 1
665	609 DALKTCTCLLKECRLELAKCISNPACAANVACLQTCNNRPDETECQIKCGDLFENS 6	Qy
1149	1104 TPSQKAEITELSTILEESGSQFEFTQFRKPSYILQKSTFEVPENQM 1	Db 1
808	PKDVALMVWEKWGQFAKTAIVAI	Qy
1103	070 AHLQSSVVVSDCKNSHITPQMLFSKQDFNSNHNL 1	Db 1
554	VVAKICSSRRIPRYFRKSPRICCGLDSRGLQLFSHGKH	Qy
1069	015 KEIKLSEHNIKKSKMFFKDIEEQYPTSLACVEIVNTLALDNQKKLSKPQSINTVS 1	рь 1
498	EKEI-	Qy
1014	NSVK-QHIKMTLGQDLKSDISLNIDKIPEKNNDYMNKWAGLLGPISNHSFGGSFRTASN 1	В
443	LEGFKELQQDEENFVRELSK 4	Qy
955	896 NERNNLALGNTKELHETDLTCVNEPIFKNSTMVLYGDTGDKQATQVSIKKDLVYVLAEEN 9	Дb
106	KLLIKEAVEIEEEVE 4	Qy
395	847 RKVQFNQNTNLRVIQKNQEETTSISKITVNPDSEELFSDNENNEVFQVA 8	Вb
368	325 RNDAWDGYGGSVIYTRSPTLPESIIPNLOKAAKSVGRDFNNFI 3	Qy
346	802NYESDVELTKNIPMEKNQDVCALNENYKNVELLPPEKYMRVASPS 8	Db
324	269 GFFTRSAVQTFVQDPDLPGALYNHDNEFLHYQDDWYILSSQIENKPDDYIFVYYRG 3	Qy
302	752 DFQSQKSLLYDHENASTLILTPTSKDVLSNLVMISRGKESYKMSDKLKGN 8	ф

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